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CANADIAN JOURNAL OF OPTOMETRY REVUE CANADIENNE D'OPTOMÉTRIE

VOL 71 NO 3 MAY/MAI 2009

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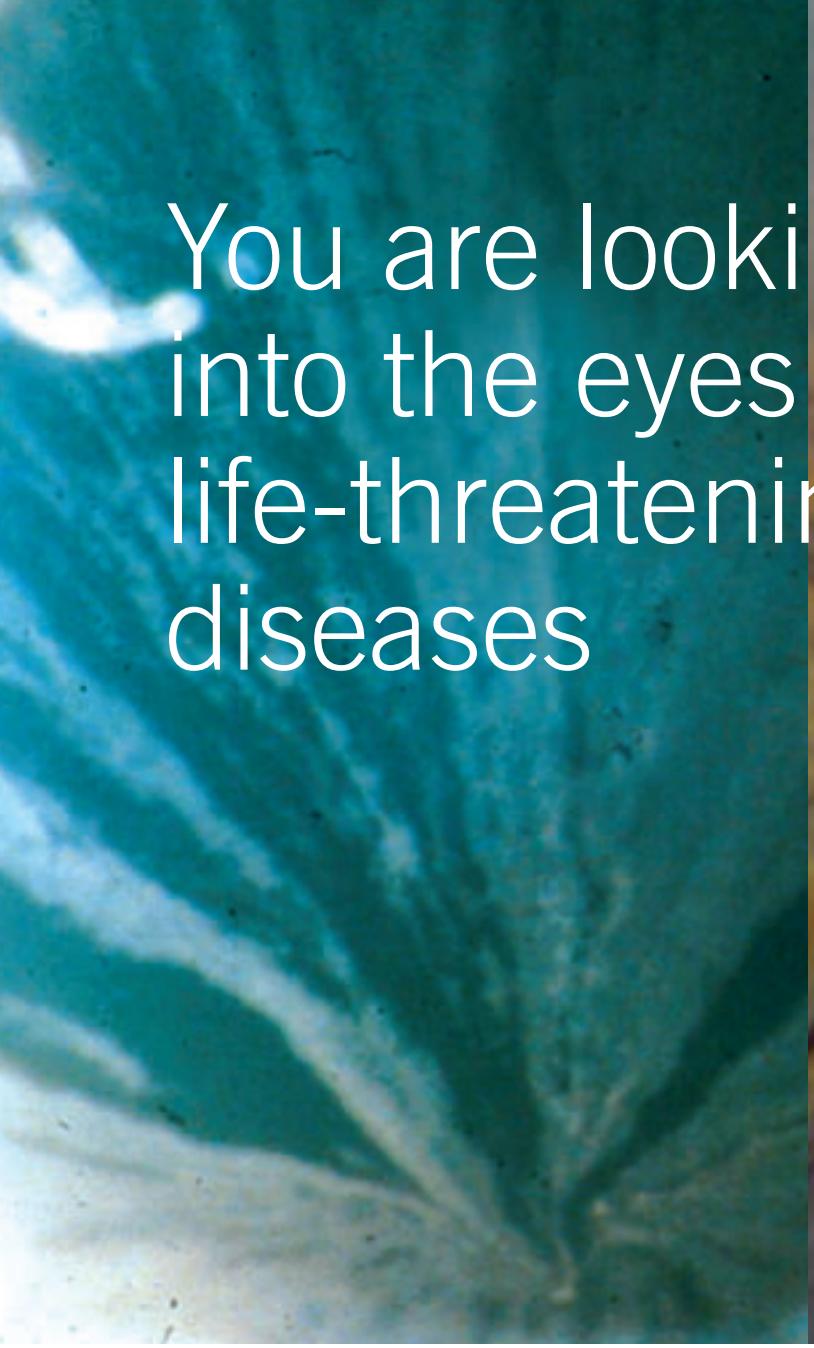

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Centennial Celebrations Célébrations du centenaire

by / par **LEN KOLTUN, OD, PRESIDENT CAO/ PRÉSIDENT DE L'ACO**

Let the celebrations begin! 2009 marks the 100th anniversary of the proclamation of optometry's first Canadian legislative recognition for three provinces — Manitoba, Quebec and Ontario. I've had the honor and privilege of attending the Gala celebrations in Ontario and Manitoba earlier this year (see President's Travels) and both venues presented a festive atmosphere with upbeat speeches, presentations and grand banquet, all providing an excellent celebration and tribute to their history. This is just the beginning!

But, just how did this all begin? What possessed certain individuals to embark on this new frontier of vision care and spectacles 100 years ago? To help us understand, I was able to uncover this portion of Saskatchewan history:

> *"In the city of Regina, there smolders a mind seized with the vision of a new breed of men, men who would devote their full energy to the exclusive sale of spectacles. This visionary even allows himself to be carried farther away and foresees – perhaps even less than 50 years ahead – men who would completely expel the concept of commercialism and recognize that spectacles themselves have no materialistic value; that a prescription lens is nothing more than that which, in the opinion of the optometrist, corrects the vision problem of his patient; and that the frame is simply the vehicle which carries the lenses in correct alignment before the patient's eyes. Finally, the smoldering burst into flame and the vision became a crusade, as he surrounded himself with men who saw the wisdom of his prophecy, and held them on a course of unfaltering determination. That man, whose memory is held in a reverent place in the hearts of all who knew him, the father of organized Optometry in Saskatchewan, is the late Herbert S McClung".*

We must conclude that the 'minds of many other men' across Canada were also smoldering with a similar vision and prophecy as this new movement gained prominence, recognition and ultimately, legislative status. Another meeting of the minds occurred in 1948 as the Canadian Association of Optometrists was formed, with McClung becoming the first CAO President.

What seemed a far reaching concept 100 years ago is overshadowed today by the reality that optometry is a very important and respected provider in the eye and health care delivery system right across Canada. We are fortunate indeed to have benefited from the 'vision', hard work and dedication of these pioneers, who never even dreamed of where we stand today. We are today at the threshold of a NEW optometry — one that is integrated into the health care system, respected by other health care professionals and the public. We have turned the corner on criticisms of selling glasses unnecessarily, selling our services at fair grounds, causing harm with contact lenses and being mere tradesmen. We have two university integrated schools, both recently renovated; we have pan-Canadian legislatively approved TPAs and soon an MRA; we are participating in a pan-Canadian study on Vision Care of Canadians; and we, by far, provide the majority of routine eye examinations in Canada. We are achieving brand recognition as the 'go to' 'eye guys' promoting preventive and comprehensive eye health care.

What's next? Well, who, a hundred years ago would have dreamed of computerized auto refractors and lensometers, refractive surgery, laser scanning ophthalmoscopes, cell phones, faxes, jet planes, satellites, men on the moon or space stations? Consider those earlier prophecies, optometry's challenges, optometry's growth in size and stature and begin dreaming of an even more

Glenbow Archives, ND-3-6501

Interior of optometrist's of ce, 1933.

WE ARE FORTUNATE INDEED TO HAVE BENEFITED FROM THE 'VISION', HARD WORK AND DEDICATION OF THESE PIONEERS, WHO NEVER EVEN DREAMED OF WHERE WE STAND TODAY.

all encompassing and technologically advanced future. We can draw strength and inspiration from our predecessors and our past but optome*try is 'a work in progress' and we must challenge ourselves to be the best we can be, and then some. Our greatest strength is the minds of you our colleagues so now, it's our turn to 'dream on and lead on'! Raise your glasses high and toast to our glorious past and dare to dream about the next 100 years!!*

Que les célébrations commencent! L'année 2009 marque le 100e anniversaire de la proclamation de la première loi canadienne reconnaissant l'optométrie dans trois provinces, en l'occurrence le Manitoba, le Québec et l'Ontario. J'ai eu l'honneur et le privilège d'assister aux célébrations de gala en Ontario et au Manitoba plus tôt cette année (voir les déplacements du président). Dans les deux cas, l'atmosphère de fête a été agrémentée de conférences et de présentations enlevées ainsi que d'un banquet grandiose qui ont tous permis aux provinces de célébrer magnifiquement leur histoire. Et ce n'est que le début!

Mais comment tout cela a-t-il commencé? Comment certaines personnes ont-elles été amenées à se lancer dans cette nouvelle aventure des soins de la vue et des lunettes il y a 100 ans? Pour nous aider à comprendre, voici une partie de l'histoire de la Saskatchewan que j'ai pu découvrir :

« Dans la ville de Regina se trouve un esprit dans lequel bouillonne la vision d'une nouvelle race d'hommes, des hommes qui consacreraient toute leur énergie à la seule vente de lunettes. Ce visionnaire se permet même d'aller plus loin encore et de prévoir — peut-être dans moins de 50 ans — des hommes qui s'affranchiraient complètement du mercantilisme pour reconnaître que les lunettes en elles-mêmes n'ont aucune valeur matérialiste; qu'une lentille de prescription n'est rien de plus que ce qui, de l'avis de l'optométriste, corrige le problème de vision de son patient; et que la monture n'est simplement que le véhicule qui aligne parfaitement la lentille avec l'œil de son patient. Pour terminer, ce bouillonnement s'est enflammé et la vision est devenue une croisade lorsqu'il s'est entouré d'hommes qui ont reconnu la sagesse de sa prophétie et qu'il les a dirigés avec une détermination infaillible. Cet homme, dont la mémoire tient une place de choix dans le cœur de tous ceux qui l'ont connu, le père de l'optométrie organisée en Saskatchewan, est feu Herbert S McClung ».

Nous devons conclure que « l'esprit de beaucoup d'autres hommes » au Canada bouillonnait aussi d'une prophétie et d'une vision similaires à mesure que ce nouveau mouvement a pris de l'ampleur et a été reconnu en fin de compte par un acte législatif. Une autre entente profonde est survenue en 1948 lors de la création de l'Association canadienne des optométristes dont McClung a été le premier président.

Ce qui semblait il y a 100 ans un concept lointain s'éclipse aujourd'hui devant la réalité que l'optométrie est un fournisseur très important et respecté dans le système de soins oculo-visuels et dans le système de santé au Canada. Nous sommes effectivement fortunés d'avoir pu bénéficier de la « vision », du travail acharné et du dévouement de ces pionniers qui n'ont même jamais imaginé ce que nous sommes devenus aujourd'hui. Nous nous trouvons aujourd'hui au seuil d'une NOUVELLE optométrie, une optométrie qui s'intègre dans le système des soins de santé et qui est respectée par les autres professionnels de la santé et le public. Nous avons aujourd'hui dépassé le moment où l'on nous critiquait de vendre inutilement des lunettes, de colporter nos services dans les foires, d'ajuster des verres de contact dommageables et d'être de simples commerçants. Nous avons deux écoles universitaires qui ont toutes deux été récemment rénovées; nous avons une législation pancanadienne pour les APT et, bientôt, une ERM; nous participons à une étude pancanadienne sur les soins de la vue des Canadiens; et nous dispensons de loin la plus grande partie des examens de la vue réguliers au Canada. Notre marque de commerce nous présente comme les spécialistes de l'œil qui s'occupent de promouvoir la prévention et d'offrir des soins de santé oculo-visuels complets.

Et après? Qui, il y a cent ans, aurait rêvé d'autoréfracteurs informatisés et de lensomètres, de chirurgie réfractive, d'ophtalmoscopes laser à balayage, de téléphones cellulaires, de télécopieurs, d'avions à réaction, de satellites, d'hommes sur la lune ou de stations spatiales? Songez à ces premières prophéties, aux défis de l'optométrie, à la croissance et à l'envergure de l'optométrie, et commencez à rêver d'un futur encore plus englobant et technologiquement avancé. Nous pouvons puiser la force et l'inspiration de nos prédécesseurs et de notre passé, mais l'optométrie est un travail en évolution et nous devons nous stimuler à faire de notre mieux et plus encore. Notre plus grande force, c'est vous, nos collègues. Il est maintenant temps de rêver et de prendre la tête ». Levons haut nos verres et portons un toast à notre glorieux passé et osons rêver aux 100 prochaines années!

The entrance to the new expansion at the UW School. Architectural subtleties are worth noting — the operculum at the top and the acuity letters on the entrance wall.

CAO's past presidents, left to right; Dr. Doug Cote, Dr. Margaret Hansen-Desgroselliers, Dr. Len Koltun (current CAO President), Dr. Rolland DesGroselliers, Dr. Dorrie Morrow.

OAO AGM and Gala

April 1 – 4 2009, Toronto, ON

The OAO is in the midst of some exciting and historic times. Besides the 100th anniversary celebrations, they are anxiously awaiting enabling TPA regulations (especially since the positive HPRAC recommendations in Jan 2009); the official opening of the addition to the School at UW; preparing a future strategic plan and celebrating increases to their OHIP reimbursement schedule. Their AGM highlighted reports from the School; Dr. Paul Chris on a new diabetes project; Dr. Derek McDonald on NPEC, as well as member feedback on some future priority questions (which was very efficiently and confidentially determined though remote voting recording devices). Ontario has been focusing on their ACE Strategy (Advocacy, Community and Education) with much success and is clearly looking towards forging a stronger future for optometry in Ontario. The CAO council was invited to the awards luncheon where Dr. Jake Sivak, Dr. Derek MacDonald and Dr. Chris Nichol were recognized for outstanding contributions to the profession in Ontario. The UW School of Optometry also hosted a reception Thursday evening where Dr. Thom Freddo presented an update on the expansion.

The CE Symposium was timely and featured many quality speakers at breakfasts and throughout the weekend presenting on IOLs, AMD, marketing, new contact lens technologies; and our own CAO Past President Dr. Alphonse Carew who spoke on practice management. The Info-Mart was huge and CAO's booth (provided n/c – thank you OAO) looked excellent, featuring a very large vase with some super gigantic oranges. (Good work Doug.)

Ontario is the first province to celebrate this year the 100th anniversary of the passing of their optometry Act. The scene was the Sheraton Centre, downtown Toronto and the venue was first class. A spectacular '100th' ice sculpture graced the entrance to the elegantly decorated ballroom. Master of ceremonies, Dr. Joe Chan, welcomed everyone, provided a brief history of the OAO and introduced the guest speaker, the Ontario Minister of Health. The Minister spoke very highly of Ontario optometrists' contributions to the eye health care of its citizens. He was also optimistic that the TPA regulations, including glaucoma management, would be passed soon. The evening continued with a delicious meal (entré of roast (Alberta) beef) and live band to round out the evening. The entire event was thoughtfully and tastefully presented. Congratulations to the OAO and the organizing committee for arranging this wonderful weekend!!

MAO AGM and Gala

April 17 – 19, 2009, Winnipeg, MB

The MAO went all out to provide a busy weekend of CE, association meetings, trade show and a wonderful memorable 100th Anniversary celebration!! The CE featured informative lectures on glaucoma (very timely since this may be one of the next treatment modalities in ON and hopefully MB!), SH lenses, gonioscopy, anterior segment conditions as well as an update on the UW school expansion. Football legend Milt Stiegel was the celebrity guest at one of the trade show booths and, being the gentleman that he is, graciously provided autographs – including for us Rider fans! There was great excitement and anticipation as many door prizes were given away at both the trade show and Gala. Conveniently, several of the lecturers from the UW School were also members of the Lost Faculties band which rocked the house at the Gala on Saturday night!!

Turnout at the AGM was high and discussion was lengthy in providing direction to both, the Manitoba Health (for fee payment schedules) and TPA negotiating committees. Members also received an update on their pending omnibus RHPA legislation (Regulated Health Profession's Act), which will hopefully be passed soon. The Congress Committee presented a draft PowerPoint presentation promoting the 2011 Congress in Winnipeg. I informed them that their presentation would be taking place at the President's Ball. The hospitality room was very lively and continued well into the wee hours, talking about optometry (of course!) and celebrating Dr. Michelle Georgi's election as the new MAO President.

Past CAO Presidents from Manitoba, left to right; Dr. Roy Brown, Woody Spearman, Len Koltun (current President – not from Manitoba), Bruce Rozner, Scott Mundle.

The Gala delivered an excellent program featuring a brief history of the association supplemented with a continuously running slide show of classic memories in the background. The dance floor was crowded, with many guests, including the President of the COS, Dr. Lorne Bellan (we have since exchanged emails, including photos). The evening featured the presentation of many plaques and speeches. I was pleased and felt very honoured to be asked to participate in some of the presentations, particularly recognizing honorary life members, Dr Roy Brown, Dr. Woody Spearman and Dr. Oakley (Dr. Neil McCaughey was unable to attend). I also enjoyed reminiscing with these gentlemen and many others about optometry's history in Manitoba including the fact that the MAO has provided CAO with five National Presidents.

It is with great pride that I extend sincere congratulations to the MAO for your outstanding contribution to the profession and tribute to your history. Well done!

Respectfully reported,
Dr. Len Koltun, President CAO,
April 2009

Future of the Optometry Practice
L'avenir de la pratique optométrique

by / par ALPHONSE CAREW, OD

Recently I had an opportunity to consult with one of our national banks who were seeking information on how to provide enhanced services for independent professionals like optometrists. One question they asked was, what I felt the optometric practice would look like in 10 to 20 years from now. It was an interesting question that started me thinking about how the profession has changed in my more than 20 years of practice and how it will change in the next 20 years.

Some of the trends, like the expansion of our scope of practice to provide more therapeutic services will continue, but likely it will be simply tinkering at the edges of what most provinces allow now. I don't see major changes into surgical procedures or hospital based care being performed by optometrists to any significant extent. The independent, stand alone practitioner with the help of new, non-invasive, technology will however be able to diagnose and treat some of the common vision ailments we only deal with to a small extent today, like glaucoma and AMD.

Demographic changes with an aging population ensure that the need for our services will continue to be strong in the coming decades. It is estimated that in Canada the ophthalmologist-to-patient ratio will continue to fall in the foreseeable future, just as the population ages with increased incidence of eye diseases. Ophthalmology will be forced to concentrate on very specialized care leaving even more of their medical management to optometrists. Even now, government health care agencies and ophthalmologists are starting to recognize and support the importance of optometrists in the primary and secondary care of Canadians. Terms of reference for this care and the cooperation between the groups are being negotiated. This trend will continue resulting in more cooperative roles and more demand for optometric services over time.

Technology will allow relatively untrained assistants to capture patient information providing highly sensitive diagnosis by optometrists. Digital retinal imaging, the use of Optomaps, OCT's and HRT's have already greatly advanced our diagnostic power and we will see even greater enhancement of this in the future. The ophthalmic products we use in eye glasses and contact lenses will also steadily advance allowing for more options in perfecting vision. Considering the advancement in contact lens materials in recent years, one can envision a contact lens so biologically safe and acceptable for most eyes that the need for laser corrective surgery would be in doubt.

The optometric practice will likely trend towards more group settings as the most financially successful offices are those with three or more doctors. Also due to strong competitive forces that will only increase with time, I believe groups of practices (either city-wide, province-wide or nation-wide) will consolidate under one banner, or trade name. Ownership of these optometric focused chains will either be held by optometrists themselves or by other business partners as restrictions on association between doctors and corporations becomes more permissible or tested under freedom of association laws. To the public the distinction between corporate optical chains and optometric chains could become blurred as the physical set-up and marketing programs of both entities over time will appear similar. Both chains will learn the "best practices" of the other and will utilize highly trained staff with optometrists and opticians working together providing one-stop care from the eye exam to spectacles, contact lenses and laser surgery consultation with well-funded marketing programs. The consumer will be hard-pressed to tell the difference between the "chain" owned and operated by a business entity over one controlled by optometry. Whether this is good or bad for optometry depends on the penetration of optometry owned chains over corporate owned chains and how true they stay to the assumed superiority of an optometric based chain as a valid marketing position.

In general, the financial health of the optometrist (especially those who are owners of a practice) will improve over time. High quality health care and products will always be desired by Canadians and will continue to be financed, either fully or partially, by provincial health care or third party insurance providers.

Without a doubt things will change greatly over the coming 20 years, as they have over the past 20 years. Some will be welcomed and some will be forced on the optometric practice. Progress will likely be at a slow pace as optometrists are conservative by nature, but rest assured it will come and it would be wise for optometrists to act proactively to take best advantage of these changes for their practices.

Une de nos banques nationales nous a récemment consultés sur la façon de fournir des services améliorés à des professionnels indépendants comme les optométristes. L'une des questions qu'on m'a posées portait sur l'aspect que prendra, à mon avis, la pratique optométrique dans 10 ou 20 ans. Cette question intéressante m'a fait réfléchir à la façon dont la profession a évolué depuis que j'ai commencé à pratiquer il y a plus de 20 ans, et à la façon dont elle changera dans les 20 prochaines années.

Certaines tendances, comme l'expansion de notre domaine de pratique pour fournir davantage de services thérapeutiques, se poursuivront, mais ce seront vraisemblablement de simples retouches à la frontière de ce que la plupart des provinces autorisent à l'heure actuelle. Je

n'entrevois pas de grands changements dans les interventions chirurgicales ni dans les soins hospitaliers dispensés par les optométristes. Le praticien autonome et indépendant, avec l'aide d'une nouvelle technologie non invasive, sera cependant en mesure de diagnostiquer et de traiter une partie des troubles courants de la vision dont nous nous occupons que très peu aujourd'hui, comme le glaucome et la DMLA.

L'évolution démographique vers une population vieillissante garantit que nos services continueront d'être fortement demandés dans les décennies à venir. On prévoit que le rapport ophtalmologistes : patients au Canada continuera de régresser dans un avenir prévisible, tout comme la population vieillit en présentant une incidence accrue de maladies oculaires. L'ophtalmologie sera forcée de se concentrer sur des soins très spécialisés, laissant encore plus aux optométristes une partie des affections qu'ils prennent en charge. Même à l'heure actuelle, les organismes de soins de santé publics et les ophtalmologistes commencent à reconnaître et à appuyer l'importance des optométristes dans les soins de santé primaires et secondaires des Canadiens. Le mandat de ces soins et la collaboration entre les groupes font actuellement l'objet de négociations. Cette tendance se poursuivra et donnera naissance à une plus grande collaboration et à une demande accrue de services optométriques au fil du temps.

La technologie permettra à des adjoints relativement peu expérimentés de recueillir de l'information sur les patients afin que les optométristes puissent offrir des diagnostics très avancés. L'imagerie rétinienne numérique, l'Optomap, la TCO et la HRT ont déjà accru énormément notre capacité de diagnostic, et des perfectionnements encore plus avancés s'annoncent à cet égard. Les produits ophtalmiques que nous utilisons dans les verres et dans les lentilles cornéennes ne cessent de se raffiner et de perfectionner la vision. Compte tenu des progrès dans les matériaux des lentilles cornéennes depuis quelques années, on peut envisager une lentille cornéenne biologiquement sûre et acceptable pour la plupart des yeux à un point que la chirurgie corrective au laser risque d'être délaissée.

La pratique optométrique semble s'acheminer vers des regroupements encore plus nombreux puisque les cabinets les plus prospères sont ceux qui comptent trois optométristes ou plus. Vu également que la concurrence ne cessera de s'accroître avec le temps, je crois que des groupes de cabinets (urbains, provinciaux ou nationaux) fusionneront sous une bannière ou sous une appellation commerciale. Ces chaînes à vocation optométrique appartiendront soit à des optométristes, soit à d'autres partenaires commerciaux à mesure que les restrictions imposées aux associations entre les médecins et les sociétés seront davantage levées ou mises à l'épreuve aux termes de diverses lois sur la liberté d'association. Pour le public, la distinction entre les chaînes optiques et les chaînes optométriques pourrait devenir plus floue étant donné que la configuration matérielle et les programmes de commercialisation de ces deux entités prendront au fil des ans une apparence similaire. Ces deux types de chaînes adopteront les pratiques exemplaires de l'autre et leur personnel hautement qualifié travaillera de concert avec des optométristes et des opticiens à offrir un guichet unique pour les examens de la vue, les lunettes, les lentilles cornéennes et la chirurgie au laser, assortis de programmes de commercialisation bien nantis. Le consommateur aura bien du mal à faire la différence entre la « chaîne » possédée et exploitée par une entité commerciale et une autre contrôlée par l'optométrie. Que cela soit bon ou non pour l'optométrie dépendra de deux choses : la pénétration des chaînes appartenant à des optométristes par rapport aux chaînes appartenant à des sociétés, et l'importance qu'elles continueront d'accorder à la fausse supériorité d'une chaîne optométrique sur le marché.

En général, la santé financière de l'optométriste (surtout celui qui sera propriétaire d'un cabinet) s'améliorera avec le temps. Les produits et les soins de santé de haute qualité seront toujours au haut de la liste des Canadiens et continueront d'être financés en totalité ou en partie par un régime provincial ou par des assureurs tiers.

Il ne fait pas de doute que la situation évoluera beaucoup au cours des 20 prochaines années, tout comme elle l'a fait depuis 20 ans. Certaines choses seront bien accueillies et d'autres seront imposées à la pratique optométrique. Les progrès seront sans doute lents, car les optométristes ont une nature prudente, mais soyez certains qu'ils surviendront. Il serait sage que les optométristes agissent proactivement afin de profiter au maximum de ces changements dans leur pratique.

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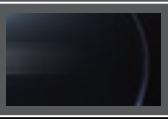
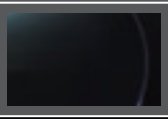
TOUGH Two Times More Scratch Resistant		

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GUEST ARTICLE

Third Party / Mangaged Care – An objective analysis

BY KIRSTEN NORTH, OD, CAO PRESIDENT ELECT

In an environment of de-listed optometric services, the role of third party insurance providers has, and will likely, become increasingly important. Third party/managed care companies may see Canada as an attractive and lucrative market now that essentially half Canada's population (predominantly those of working age) is de-listed from provincial coverage.

Freed from the constraints of provincial health programs, CAO members should be aware of the 'double-edged sword' of third party insurance providers. Generally, 'for-profit' companies may be more difficult to deal with, and dictate lower fees, than provincial insurance plans ever did.

CAO has been contacted by representatives of U.S. managed care providers seeking information about the Canadian marketplace. In some cases, these companies feel they have opportunities with Canadian subsidiaries of American clients. A tremendous cost-savings for such a corporation may be realized by extending an established program into another jurisdiction, as opposed to 'starting from scratch'.

While many American providers have a strong *national* presence, their representation in *individual* states is not equal across the United States. Solidarity is essential to the success these jurisdictions achieved.

Member education is critical in pointing out that something that seems too good to be true, likely is. Agreeing to discounts in professional fees in exchange for a possible increase in patient volumes may initially seem attractive, but could prove to have a significant negative impact upon the 'bottom line'. Clinical decision-making may also be taken out of the hands of the practitioner, but full liability for those decisions is retained.

Following are some scenarios that practitioners may find interesting:

- Patients are typically directed to specific optometric practices through 'preferred provider' lists.
- Most managed care providers will set the examination fee, and there is no option for the practitioner to 'balance bill' to reach their customary fee.
- The procedures required for each patient encounter may be dictated, removing clinical judgment (but not liability) from the equation.
- There is no option to 'limit' the number of 'managed care patients' examined.
- The ophthalmic products utilized, and their pricing, may also be dictated.
- An internal 'quality assurance' committee may review records to ensure that all required procedures have been performed – financial claw backs may apply should any 'deficiency' be identified.
- Contracts are typically of two to three years duration, at which time re-negotiation, with competition, may drive fees lower.
- Should an employee choose to attend a non-affiliated practitioner, their benefits may be significantly curtailed.

It becomes increasingly apparent that such arrangements are primarily designed to help the managed care provider be competitive; gaining market share by 1) reducing or restricting services to patients, and 2) reducing the fee payment to the provider (optometrist).

CAO members are encouraged to closely analyze and be aware of the realities of managed care.

Soins gérés/assurance de responsabilité civile – Une analyse objective

PAR KIRSTEN NORTH, OD, PRÉSIDENT DÉSIGNÉ DE L'ACO

Compte tenu de la désinscription de services optométriques, le rôle d'assureur de responsabilité civile prend de plus en plus d'importance et la tendance se poursuivra sans doute. Les sociétés de soins gérés / responsabilité civile considèrent le Canada comme un marché attrayant et lucratif maintenant que sensiblement la moitié de la population du Canada (surtout les personnes en âge de travailler) n'est plus inscrite à l'assurance maladie provinciale.

Libérés des contraintes des programmes d'assurance maladie provinciaux, les membres de l'ACO devraient prendre conscience de l'arme à double tranchant que représentent les assureurs de responsabilité civile. En général, les sociétés à but lucratif sont sans doute plus difficiles d'approche, et imposent des honoraires moins élevés, que ne l'ont jamais été les régimes d'assurance des provinces.

Des fournisseurs de soins sous gestion aux États-Unis ont communiqué avec l'ACO pour se renseigner sur le marché canadien. Certaines de ces sociétés estiment être en mesure de faire des affaires avec des filiales canadiennes de clients américains. Ces sociétés peuvent réaliser des économies de coût très importantes en étendant à un autre territoire un programme déjà établi plutôt que de partir de zéro.

Même si beaucoup d'assureurs américains ont une forte présence *nationale*, leur représentation dans les États *individuels* n'est pas uniforme aux États-Unis. La solidarité est essentielle au succès que ces secteurs de compétence ont obtenu.

Il est critique de souligner aux membres qu'une offre trop belle pour être vraie l'est sans doute. Il peut sembler au départ attrayant de diminuer les honoraires professionnels en échange d'une augmentation possible du volume de patients, mais cela pourrait avoir un effet négatif important sur le résultat final. Le praticien pourrait aussi perdre son pouvoir de décision clinique tout en demeurant pleinement responsable des décisions qui sont prises.

Voici quelques scénarios susceptibles d'intéresser les praticiens :

- Les patients sont typiquement dirigés vers un cabinet optométrique au moyen de listes de « fournisseurs privilégiés ».
- La plupart des fournisseurs de soins gérés établissent les honoraires des examens sans que le praticien ait la possibilité « d'équilibrer la facture » pour toucher ses honoraires habituels.
- Des procédures à suivre pour chaque client risquent d'être imposées, supprimant ainsi le jugement clinique (mais non la responsabilité) de l'équation.
- Il n'y a aucune option pour « limiter » le nombre de « patients en gestion des soins » examinés.
- Les produits ophtalmiques utilisés, et leur prix, risquent aussi d'être imposés.
- Un comité interne « d'assurance de la qualité » pourrait examiner les dossiers pour s'assurer que toutes les procédures exigées ont été accomplies – une retenue pécuniaire risque de s'appliquer si des « lacunes » ressortent.
- Les contrats sont typiquement d'une durée de deux à trois ans et leur reconduction, face à une concurrence, risque de faire diminuer les honoraires.
- Si un employé décide d'aller vers un praticien non affilié, ses avantages risquent d'être substantiellement amputés.

Il est de plus en plus apparent que ces modalités ont principalement pour but de rendre le fournisseur de soins gérés plus concurrentiel et d'accroître sa part du marché 1) en réduisant ou en restreignant les services aux patients et 2) en réduisant les honoraires versés aux fournisseurs (optométristes).

Nous incitons fortement les membres de l'ACO à analyser attentivement les réalités des soins gérés.

Nutrition and Behavior as it Applies to Systemic and Ocular Disease 2008

BY LARRY J. ALEXANDER, OD, FAAO

Introduction and the Importance of Diet

After several years in the practice of health care and watching an increase in immune-complex disorders, inflammatory disorders and degenerative diseases, I believe it is time for the health care community to initiate Cross-Talk. One recent study reports a healthy lifestyle combining not smoking, a healthy weight, a healthful diet including moderate alcohol consumption, and daily exercise reduced ischemic strokes by approximately half in both men and women.[1] The transfer of this critical information to all health care providers is important to the long-term health of all. This represents the essence of the Cross-Talk.

Most specialties and sub-specialties are publishing discoveries within their own journals without communicating those findings to other disciplines in spite of the fact that the results may have direct impact on the management of a different body system. As an example, how many health care practitioners who treat herpes zoster have read:

"Herpes zoster. The treatment and prevention of neuralgia with adenosine monophosphate. [2]

Thirty-two adults were enrolled in a randomized, placebo-controlled double-blind trial of intramuscular injections of gel-sustained adenosine monophosphate (AMP) given three times a week for up to four weeks for acute herpes zoster. Adenosine mono phosphate moderately reduced the pain soon after the start of treatment, decreased desquamation time, and promoted faster healing of the skin than placebo treatment. Adenosine monophosphate treatment reduced virus shedding and cleared the virus faster than in placebo-treated subjects. At the end of the initial four-week treatment period, 88% of AMP-treated patients were pain free, as opposed to only 43% in the placebo group. After four weeks, all patients who had not recovered from pain started receiving AMP treatment without breaking the code. All these patients recovered from pain within three weeks after initiation of treatment. No recurrence of pain or lesions was experienced from three to 18 months after the end of treatment. Adenosine monophosphate, a natural cellular metabolite, showed no side effects or toxicity during and after the treatment."

The eye provides an excellent model to illustrate the impact of one discipline on another. Cardiologists are well aware of the potential of some nutritional supplements in the management of vascular disorders. Vascular alteration to the eye results in a number of disorders including glaucoma and macular degeneration. Why then would an eye care professional not want to realize the ongoing thought process in cardiology. Dermatology realizes that Coenzyme Q10 (CoQ10) levels reflect the likelihood for the progression of malignant melanoma, one of the more dreaded ocular conditions.

Of particular interest is the behavior of our society in the creation of nutritional deficiencies. Poverty, drug side effects, drug abuse, alcoholism, gastric bypass (bariatric surgery), fad diets, and just ignorance may be opening a door to the genesis of an entirely new set of nutritionally-based diseases and disorders. A question that we all must ask in relation to the work-up of any ocular disease patient must include nutritionally-related issues. [3] The decreased survival of AREDS participants with Age-Related Macular Degeneration (AMD) and cataracts suggests that these conditions may reflect systemic rather than only local processes.[4] Vitamin A deficiency at the least may become an issue associated with fat mal-absorption associated with bariatric surgery[5] which will then impact directly on the genesis of dysfunctional tear syndrome. Vitamin B12 and folate deficiency is also related to mal-absorption and is well known to create ocular side effects with a strong relationship to hyperhomocysteinemia which represents a major cardiovascular threat. [6-9] In spite of a purportedly healthy diet in the US 10%-14% of Americans

have a vitamin C deficiency, [10] and up to 15% of adults over 60 years of age have laboratory evidence of B12 deficiency.[6] Treatment of the majority patients with these readily obtainable nutrients involves basic diet good sense or supplementation as well as exercise and general modification of behavior including cessation of smoking and minimizing the use of alcohol. It continues to amaze that patients believe in the magic bullet. A recent study points out that despite eating a diet rich in omega-3 fatty acids, Alaskan Eskimo patients are developing subclinical atherosclerosis at an early age, likely due in large part to heavy smoking.[11] The thrust of the message in this discussion is that synergism is key rather than an isolated monotherapy approach in the management of most chronic, neurodegenerative, and inflammatory disorders. Modulation (balance) is the critical watchword in the approach to the management of health in most individuals while minimizing risk. Radical behavior or unbalanced therapy can and will create far more harm than good. Exercise potentiates effects and combinant therapies represent the theme of recent "eurekas." Regular exercise and consuming long-chain n-3 fatty acids (FAs) from fish or fish oil can independently improve cardiovascular and metabolic health, but combining these lifestyle modifications may be more effective than either treatment alone. *(Am J Clin Nutr 2007;85:1267)* There is no magic pill, but rather a mental set and lifestyle that set the tone for maximizing health. While we should expect everyone to modulate their behavior to maximize their health it just will not happen so we must arm ourselves to become "personal health advisors" to our patients. A recent review study corroborates this stating that healthy lifestyle habits include not smoking, maintenance of optimal BMI, moderate alcohol consumption, and daily exercise. In men and women, maintenance of healthy lifestyle habits is associated with an 80% reduction in the risk for stroke.[1]

Another critical issue regarding supplementation is that the health care provider is often unaware of the patient's use of non-pharmaceutical products. Vitamin E and Gingko biloba may not be reported in patients using blood thinners. Prothrombin times (PT) will definitely be affected by the utilization of many supplements leading to the possibility of increased bleedability. In a survey conducted in 1999, about 49% of adult Americans were estimated to have used herbal products during the previous year. It has been documented that as many as 31% of the patients who use herbal supplements do so in conjunction with prescribed drugs and about 70% of these patients do not regularly report the use of these products to their health care providers. [12-13]

Another enlightening report speaks to the use of complementary medicine use in cancer survivors. It is reported that prayer and spiritual practice were the most prevalent methods, reported by 61.4% of survivors. This was followed by relaxation (44.3%), faith and spiritual healing (42.4%), nutritional supplements and vitamins (40.1%), meditation (15%), religious counseling (11.3%), massage (11.2%), and support groups (9.7%). Hypnosis was least likely to be used (0.4%), and biofeedback therapy (1.0%) and acupuncture/acupressure (1.2%) were used only slightly more often.[14]

One critical issue to address is the validity of claims that evolve from scientific studies. This discussion is intended to be scientifically-based to provide the reader with an understanding of the potential of behavioral issues as they relate to the genesis of ocular and systemic disorders. With that in mind be cognizant of the fact that numerous claims by a plethora of studies have yet to be substantiated. The difficulty in developing incontrovertible evidence stems from the complexity of human trials. Extrapolation of some of the concepts of basic research to clinical application is possible, but guarded optimism is the watchword until clinical trials support results. Any analysis of published reports must be tempered by the structure of the study. Peter McDonnell in a recent editorial in Ophthalmology Times February 15, 2006, discusses "Are you skeptical of the latest peer-reviewed results?" Dr. McDonnell cites an article by Ioannidis regarding the fact that Ioannidis reviewed 49 "important" research articles published in top medical journals between 1990 and 2003 and subsequently cited 1000 times. Over 33% of these articles were found to be wrong." [15-17] Critical review of new ideas prior to translation of the information to the general health care delivery team is critical in the evolution of any educational model. Increased fraud in publication of trials also seems to be on the increase with printed retractions occurring far after the potential impact of the results[18-19] as well as an excess of apparently significant clinical findings.[20] One Canadian study provided an

interesting commentary on industry-sponsored research on prostaglandin medications. They found that industry-funded studies were significantly more likely (19/27 studies = 70%) to have abstract conclusions that did not match the actual reported main outcomes of the study than were non-industry-funded investigations (2/12 = 17%, $P = .002$). Conclusions of the abstracts in industry-funded studies were supportive of the company's drug 89% of the time.[21]

With the caveat of guarded optimism the investigation of the literature regarding cross-talk may be initiated.

Diet That Supports Anti-Inf ammation, Neuroprotection and Overall Ocular Health

The eyes are truly the window to both the soul and functioning of the body. All aspects of health are ultimately reflected in the health of the eye but the direct cause-effect relationship is evasive because of the cumulative effect of one's actions. Diet and diets both affect the health of the eyes. An abusive diet, drug interactions, and toxicities create health issues within the cardiovascular, endocrine and neurological systems that reflect in ocular function. Likewise radical diets and bariatric surgery rob the body of essential nutrients to promote proper function. This discussion will but touch the high points of diet, behavioral modification and supplementation but will speak to the importance of a coordinated effort in preventing and managing systemic and thus ocular disorders.

Excessive weight and obesity in concert with an inappropriate diet loom as a constant threat to both systemic and ocular health. [22-23] Morbidity and mortality are both affected by diet with a prudent approach being to maintain your weight at a reasonable level while concurrently consuming health-sustaining nutrients. There are studies linking obesity to macular degeneration.[24] In one report overall and abdominal obesity increased the risk for progression to advanced AMD, and more physical activity tended to decrease risk. [25-26] Ironically there is also increased risk should the patient be too thin implying the influence of malnourishment.[27] Another recent report suggests that in Latinos cardiovascular risk factors may play a role in advanced AMD. [28] This should be of no surprise since Richer's original work demonstrated that cardiovascular risk factors including serum Fe levels contributed to the progression of AMD. [29-30] The other risk factors often associated with heart disease such as smoking and altered blood composition are also modifiable in our patient base. [31-35] Reports also attest to the fact that obesity is actually related to a decrease in macular pigment levels that may be attributable to an inherent competition with adipose tissue. [36-38] Serum levels of lutein and zeaxanthin are the true measures of efficacy of the protective effects of diet and both levels are measured lower with obesity and diabetes.[36] All of these studies still do not absolutely indicate the need for diet control from a scientific standpoint, but studies point to the necessity for cessation of smoking in minimizing the risk for AMD. [39]

From the standpoint of cataract development there has been much discussion regarding diet. While very specific, some studies show a link of metabolic syndrome with the genesis of cataracts.[40-41] It appears that there is a link between oxidative stress and cataract formation with smoking again being implicated.[42] In general it also appears that obesity is a positive marker for the increased likelihood of cataract formation but a bit unpredictable based on the type of cataract.[43-45] With a higher Body Mass Index (BMI), abdominal obesity, and diabetes, patients develop a higher incidence of cortical and posterior sub-capsular cataracts.[46-47]

The link to diabetes and obesity (most specifically the metabolic syndrome) is incontrovertible.[48-51] Metabolic syndrome denotes a common cluster of naturally connected risk factors including obesity, elevated blood pressure, insulin resistance, dyslipidemia, proinflammatory state and prothrombotic state. This scenario (the metabolic syndrome) has the potential to lead to multiple retinal vascular flow issues within the eye. [52] The link to diabetic retinopathy is more circumspect but studies have linked retinal microvasculopathy to metabolic syndrome.[49, 53] Inhibition of inflammatory mediators is likewise implicated in minimizing diabetes risks [54] and can be achieved by dietary modification. A diet designed to address the metabolic syndrome may be the direction to go to minimize the risk of diabetic retinopathy, but clinical trials must corroborate this conclusion. Additionally one must address other situations that may increase oxidative stress and decrease oxygenated blood supply to the eye such as smoking and sleep apnea.

There also exists an association of weight issues to glaucoma. There is certainly a suggestion that there is an association of insulin resistance and the metabolic syndrome to increased intraocular pressure.[55] Body Mass Index appears to have an association with elevated intraocular pressure.[56-59] Certainly initial reaction to this fact among clinicians would be to point to neck size and positive pressure as a related factor with sleep apnea falling into the picture.[60-61] The relationship of cerebrospinal fluid pressure elevation, Idiopathic Intracranial Hypertension, serum cortisol, and sleep apnea also create an interesting scenario for elevated intraocular pressure.[62] While further analysis from a scientific standpoint is critical, it does appear, quite logically, that obesity has a link to glaucoma if from no other standpoint than physical restriction of flow.

Cordain contends that our Western diet has evolved in a disparate manner from our basic biological needs.[63] The contention is that we still have cave-man genes (genotype) requiring the Paleolithic diet that are not being properly nourished by our current diet. This aberrant diet then creates an oxidative stress that impacts on the inflammatory reaction as well as the immune system. Oxidative stress in glaucoma leads to alterations in Retinal Ganglion Cells that precipitate damage. Similar results could be expected in other ocular disorders. Without proper conversion of these radicals the stress creates a poison to the system.[64] Phytochemicals such as green or black tea [65-67], coffee [68], dark chocolate [69], and red wine [70-71] contain polyphenolic compounds that act as free radical scavengers.[72] A recent paper looking at a subset of black women attests to the fact that consuming three or more servings of fruit each day was associated with a 79% decrease in glaucoma risk compared with eating less than one serving per day.[73] Likewise as one would expect, in another study regarding African American Women, a higher intake of soft drinks and fruit drinks was associated with an increased incidence of Type 2 Diabetes.[74] Balance (MODULATION) is the watchword in any issue of diet, supplementation and behavioral modification.

Additionally a recent study offers the following recommendations for an anti-inflammatory diet to improve the overall health and most specifically the cardiovascular system which has strong implications in all ocular disorders with carry over to neurodegenerative diseases. C-reactive protein levels are a very good indicator of the presence of systemic inflammation and have been shown to be elevated in many ocular disorders. Any disease with elevated C-reactive proteins will potentially benefit from an anti-inflammatory diet.

"This anti-inflammatory diet should be considered for the primary and secondary prevention of coronary artery disease and diabetes." [75]

- The glycemic index of a food is defined as the incremental increase in the area under the postprandial glucose curve after ingestion of 50 g of a specific amount of food versus that associated with 50 g of oral glucose. Ideal carbohydrates with a low glycemic index include green leafy vegetables such as broccoli and spinach and fruits such as grapefruits and cherries. Select high-fiber carbohydrates with low glycemic index, including vegetables, fruits, whole grains, legumes, and nuts.
- Excess intake of processed carbohydrates leads to a vicious cycle of transient spikes in blood glucose levels, increased insulin production, and reactive hypoglycemia. Avoid highly processed foods and beverages, particularly those containing sugar, high-fructose corn syrup, white flour, or trans fats.
- Berries, dark chocolate, red wine, tea, and pomegranates reduce postprandial oxidant stress and inflammation. Cacao beans contain a subclass of flavonoids which have been reported to augment eNOS and thereby NO. This improves endothelium-dependent vaso-relaxation.[76] One study showed that one square of dark chocolate was 6.3 g and represented only 30 kcal per day but previous studies have shown that 100 g of dark chocolate lowers BP by 12/8 mm Hg but with the risk of increased caloric intake.[77]
- Coffee contains antioxidants and can improve insulin sensitivity. Consumption of black tea reduces platelet activation and plasma levels of C-reactive protein. However, previous research


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has not demonstrated a consistent reduction in the risk for stroke associated with coffee or tea consumption. One study suggests that higher levels of coffee and tea consumption can reduce the risk for cerebral infarction among male smokers but not risk rates of intracranial hemorrhage. [78]

- When paired with a high-glycemic-index meal, cinnamon slows gastric emptying and reduces postprandial glucose excursion.
- Nuts also slow gastric emptying and can reduce the impact of high-glycemic-index carbohydrates by as much as half. Nuts also reduce postprandial oxidative protein damage, and consumption of nuts at least 5 times weekly can reduced the risks for coronary artery disease and diabetes by 20% to 50%. Eat approximately 1 handful of nuts daily (using a closed fist), consumed with vegetables, grains, berries, or other fruits.
- Vinegar can reduce postprandial glycemia and promotes satiety. Eat salad daily, consisting of leafy greens with dressing of vinegar and virgin olive oil.
- Lean protein reduces postprandial glucose excursion and improves satiety. Such protein includes egg whites, game meat, skinless poultry breast meat, and whey protein or other nonfat dairy protein. At all 3 meals, consume lean protein.
- Drinking 0.5 to 1 alcoholic drink per day for women and 1 to 2 alcoholic drinks per day for men can reduce cardiovascular risk, and 1 to 2 drinks before a meal can reduce postprandial glucose and insulin levels. However, higher levels of drinking can impair glucose metabolism.
- Exercise acutely lowers glucose and triglyceride levels in a dose-dependent fashion.Perform physical activity for at least 30 minutes or more daily, of at least moderate intensity.
- Maintain normal weight and avoid overweight or obesity. Waist circumference should be less than one half of height in inches.

It has been demonstrated that a low glycemic index diet is beneficial for both weight loss and lipid profiles.[79] Additionally women in the highest quintile of consumption of a high-fat, low-fiber diet had an increase in the relative risk of developing colon cancer of 1.46 compared with those in the lowest quintile. However, consumption of a high-fiber and healthy protein diet was associated with a trend toward reduced rates of colon cancer. Diet did not significantly affect the risk for rectal cancer.[80]

In a perfect world where we all ate the Paleolithic diet, exercised, maintained the proper weight and did not consume any substances with potential toxicity, supplementation would be totally unnecessary. However, the world is less than perfect and even the most well-meaning are faced with less than optimal lifestyles, therefore there must be some attention paid to reminders and supplementation. It is also critical that with any of these considerations, potential toxicities and interactions must be addressed.

CHARACTERISTICS OF THE METABOLIC SYNDROME

1. Abdominal obesity
2. Atherogenic dyslipidemia
3. Elevated Blood Pressure
4. High insulin levels-over 10
   - **a.** Raises fats into cells
   - **b.** Promotes fat storage
   - **c.** Stimulates arterial smooth muscle cells
   - **d.** Promotes production of bad types of eicosanoid (EC) -intracellular hormones
   - **e.** Series one ECs are good and may be inhibited by too much flaxseed
   - **f.** Series two ECs are bad-glucagon is a strong inhibitor of EC 2 pathway
5. Promotes retention of fluids by kidneys

Glucagon is the anti-insulin and is increased by high proteins low carbohydrates

6. High levels of inflammatory mediators as measured by C-Reactive Protein levels

Part two of this series will start to address the reported benefits of specific nutrients and supplements.

Dr. Alexander receives no reimbursement from any nutritional supply company. He serves as an advisor on the Biosyntrx board for no remuneration. He is the Director of Clinical Education for Optovue, Inc, a digital imaging company, which produces the RTVue.

References:

1. CME Author Lie D. Overall healthy lifestyle significantly reduces stroke risk. August 11 Online First issue of Circulation. Medscape CME August 15, 2008.
2. Sklar SH, Blue WT, Alexander EJ, et al. Herpes zoster. The treatment and prevention of neuralgia with adenosine monophosphate. JAMA 1985;253:1427-30.
3. Kullman G, Bennett JL, Mandava N, Kahook M. Nutritional Deficiencies. Glaucoma Today 2007;5:33-35.
4. AREDS Report No. 13 AREDS Research Group associations of mortality with ocular disorders and an intervention of high-dose antioxidants and zinc in the Age-Related Eye Disease Study. Arch Ophthalmol. 2004;122:716-726.
5. Spits Y, De Laey JJ, Leroy BP. Rapid recovery of night blindness due to obesity surgery after vitamin A repletion therapy. Br J Ophthalmol. 2004;88:583-585.
6. Andràs E, Affenberger S, Vinzio S, et al. Food-cobalimin malabsorption in elderly patients: clinical manifestations and treatment. Am J Med. 2005;118:1154-1159.
7. Hvas A, Nexo E. Diagnosis and treatment of vitamin B_{12} deficiency—an update. Haematologica. 2006;91:1506-1512.
8. Sadun AA. Metabolic optic neuropathies. Semin Ophthalmol. 2002;17:29-32.
9. Pfeiffer CM, Caudill SP, Gunter EW, et al. Biochemical indicators of B vitamin status in the US population after folic acid fortification: results from the National Health and Nutrition Examination Survey 1999-2000. Am J Clin Nutr. 2005;82:442-450.
10. Hampl JS, Taylor CA, Johnston CS. Vitamin C deficiency and depletion in the United States: the Third National Health and Nutrition Examination Survey, 1988 to 1994. Am J Public Health. 2004;94:870-875.
11. Cutchins A, Roman MJ, Devereux RB, et al. Prevalence and correlates of sub-clinical atherosclerosis in Alaska Eskimos: The GOCADAN study. Stroke 2008; DOI:10.1161/STROKEAHA.108.519199. Available at: stroke.ahajournals.org.
12. Wirth JH, Hudgins JC, Paice JA. Use of herbal therapies to relieve pain: A review of efficacy and adverse effects. Pain Mang Nurs 2005;6:145-167.
13. Abebe 2002. Abebe W. Herbal medication: Potential for adverse interactions with analgesic drugs. Journal of Clinical Pharmacy & Therapeutics 2002;27:391-401.
14. Gansler T, Kaw C, Crammer C, Smith T. A population-based study of prevalence of complementary methods use by cancer survivors: a report from the American Cancer Society's studies of cancer survivors. Cancer 2008;113:1048-1057.
15. Montori VM, Devereaux PJ, Adhikari NK, et al. Randomized trials stopped early for benefit: a systematic review. JAMA 2005, 294:2203–2209
16. Ioannidis JP: Contradicted and initially stronger effects in highly cited clinical research. JAMA 2005, 294:218-228.
17. Ioannidis JPA. Limitations are not properly acknowledged in the scientific literature. J Clin Epidemiol 2007;60:324–9.
18. Trikalinos NA, Evangelou E, Ioannidis JP. Falsified papers in high-impact journals were slow to retract and indistinguishable from nonfraudulent papers. J Clin Epidemiol 2008;61:464-470.
19. Ioannidis, JP. Effect of the Statistical Significance of Results on the Time to Completion and Publication of Randomized Efficacy Trials. JAMA 1998;279:281-286.
20. Ioannidis JP, Trikalinos TA. An exploratory test for an excess of significant findings. Clin Trials 2007;4:245-253.
21. Program and abstracts of the Association for Research in Vision and Ophthalmology 2008 Annual Meeting; April 27-May 1, 2008; Fort Lauderdale, Florida. Abstract 1219.
22. Cheung N, Wong TY. Obesity and eye diseases. Survey of Ophthalmology 2007; 52: 180-95.
23. Everitt AV, Hilmer SN, Brand-Miller JC, et al. Dietary approaches that delay Age-Related diseases. Clin Interv Aging 2006;1:11-31.

24. Santos LP, Dinez JR, Leao AC, Sena MF. Age-related Macular Degeneration: analysis in two ophthalmological centers in Pernambuco-Brazil. Arq Bras Oftalmol 2005;68:229-233.
25. Seddon JM, Cote J, Davis N, Rosner B. Progression of Age-Related macular degeneration. Arch Ophthalmol 2003;121:785-792.
26. Moeini HA, Masoudpour H, Ghanbari H. A study of the relation between body mass index and the incidence of Age-Related macular degeneration. Br. J Ophthalmol 2005;89:964-966.
27. Schaumberg DA, Christen WG, Hankinson SE, Glynn RJ. Body mass index and the incidence of visually significant Age-Related maculopathy in men. Arch Ophthalmol 2001;119:1259-1264.
28. Fraser-Bell S, Wu J, Klein R, et al. Cardiovascular risk factors and age-related macular degeneration: the Los Angeles Latino Eye Study. Am J Ophthalmol 2008;145:308-316.
29. Richer S, Rudy D, Statkute L, et al. Serum iron, transferrin saturation, ferritin, and dietary data in age-related macular degeneration.Am J Ther. 2002 Jan-Feb;9(1):25-8.
30. Richer S, Devenport J, Lang JC. LAST II: Differential temporal responses of macular pigment optical density in patients with atrophic age-related macular degeneration to dietary supplementation with xanthophylls. Optometry 2007;78:213-219.
31. Clemons TE, Milton RC, Klein R, Seddon JM, Ferris FL. The Age Related Eye Disease Study Group. Risk factors for the incidence of advanced Age-Related Macular degeneration in the Age-Related Eye Disease Study (AREDS), AREDS report no. 19. Ophthalmology 2005; 112:533-539.
32. Klein R, Deng Y, Klein BEK, et al. Cardiovascular disease, its risk factors and treatment, and age-related macular degeneration: Women's health initiative sight exam ancillary study. Am J Ophthalmol. 2007;143:473-483.
33. Schaumberg DA, Hankinson SE, Guo Q, et al. A prospective study of 2 major Age-Related macular degeneration susceptibility alleles and interactions with modifiable risk factors. Arch Ophthalmol 2007;125:55-62.
34. Smith W, Mitchell P, Leeder SR, Wang JJ. Plasma fibrinogen Levels, other cardiovascular risk factors, and Age-Related maculopathy. Arch Ophthalmol 1998;116:583-587.
35. Drobek-Slowik M, Karczewicz D, Safranow K. The potential role of oxidative stress in the pathogenesis of the age-related macular degeneration (AMD). Postepy Hig Med Dose 2007;61:28-37
36. Mares JA, LaRowe TL, Snodderly DM, et al. CAREDS Macular Pigment Study Group and Investigators. Predictors of optical density of lutein and zeaxanthin in retinas of older women in the Carotenoids in Age-Related Eye Disease Study, an ancillary study of the Women's Health Initiative. Am J Clin Nutr 2006;84:1107-1122.
37. Johnson EJ. Obesity, Lutein metabolism, and Age-Related Macular degeneration: A Web of Connections. Nutr Rev. 2005;63:9-15.
38. Hammond BR, Ciulla TA, Snodderly M. Macular pigment density is reduced in obese subjects. IOVS 2002 43: 47-50.
39. Guymer, RH, Chong EW. Modifiable risk factors for Age-Related macular degeneration. MJA 2006;184:455-458.
40. Bojarskiene F, Cerniauskiene LR, Paunksnis A, Luksiene DI. Association of metabolic syndrome components with cataract. Medicina (Kaunas) 2006;42:115-122.
41. Paunksnis A, Bojarskiene F, Cimbalas A, et al. Relation between cataract and metabolic syndrome and its components. Eur J Ophthalmol 2007;17(4):605-14.
42. Shichi H. Cataract formation and prevention. Expert Opin Investig Drugs 2004;13:691-701
43. Paunksnis A, Bojarskiene F, Cimbalas A, et al. Relation between cataract and metabolic syndrome and Its components. Eur J Ophthalmol 2007;17:605-614.
44. Navarro E, Butierrez L, Valero C, et al. Prevalence and risk factors of Lens Opacities in the Elderly in Cuenca, Spain. Eur J Ophthalmol 2007;17:29-37.
45. Kuang TM, Tsai Sy, Hsu WM, et al. Body mass index and Age-Related cataract; the Shihpai Eye Study. Arch Ophthalmol 2005;123:1109-1114.

46. Hiller R, Podgor MJ, Sperduto RD, et al. A longitudinal study of body mass index and lens opacities. The Framingham Studies. Ophthalmology 1998;105:1244–50.
47. Jacques PF, Moeller SM, Hankinson SE, et al. Weight status, abdominal adiposity, diabetes, and Early Age-Related lens opacities. Am J Clin Nutr 2003 78: 400-405.
48. Burnet DL, Elliott LD, Quinn MT, et al. Preventing diabetes in the clinical setting. J Gen Intern Med. 2006;21:84-93.
49. Klein BE, Klein R, Lee KE. Components of the metabolic syndrome and risk of cardiovascular disease and diabetes in Beaver Dam. Diabetes Care 2002;25:1790-1794.
50. Weber MB, Narayan KM. Prventing Type 2 Diabetes: Genes or Lifestyle? Prim Care Diabetes 2008;2:65-66.
51. Twigg SM, Kamp MC, Davis TM, et al. Prediabetes: A Position Statement From the Australian Diabetes Society and Australian Diabetes Educators Association. Med J Aust. 2007;186:461-465.
52. Kosanovic-Jakovic N, Ivanovic B, Milenkovic S, et al. Anterior ischemic optic neuropathy associated with metabolic syndrome. Arq Bras Oftalmol 2008;71:62-66.
53. Wong TY, Islam FM, Klein R, et al. Retinal vascular caliber, cardiovascular risk factors, and inflammation: The Multi-Ethnic Study of Atherosclerosis (MESA). IOVS 2006;47:2341-2350.
54. Kern TS. Contributions of inflammatory processes to the development of the early stages of diabetic retinopathy. Exp Diabetes Res 2007;2007:95103.
55. Oh SW, Lee S, Park C, Kim DJ. Elevated intraocular pressure is associated with insulin resistance and metabolic syndrome. Diabetes Metab Res Rev. 2005;21:434-440.
56. Yoshida M, Ishikawa M, Kokaze, et al. Association of Life-Style with intraocular pressure in Middle-Aged and older Japanese residents. Jpn J Ophthalmol. 2003; 47;191-198.
57. Mori K, Ando F, Nomura H, et al. Relationship between intraocular pressure and obesity in Japan. Int J Epidemiol. 2000;29:661-666.
58. Lee JS, Lee SH, Oum BS, et al. Relationship between intraocular pressure and systemic health parameters in a Korean population. Clin Experiment Ophthalmol. 2002;30:237-241.
59. Memarzadeh F, Ying-Lai M, Azen SP, et al. Associations with intraocular pressure in Latinos: the Los Angeles Latino Eye Study. Am J Ophthalmol. 2008;146:69-76.
60. McNab AA. The eye and sleep apnea. Sleep Med Rev. 2007;11:269-276.
61. Dhillon S, Shapiro CM, Flanagan J. Sleep-Disordered breathing and effects on ocular health. Can J. Ophthalmol. 2007;42;238-243.
62. Daniels AB, Liu GT, Volpe NJ, et al. Profiles of obesity, weight gain, and quality of life in idiopathic intracranial hypertension (pseudotumor cerebri). (Am J Ophthalmol. 2007;143:635-641.
63. Cordain L, Eaton SB, Sebastian A, et al. Origins and evolution of the western diet: health implications for the 21st century. Am J Clin Nutr 2005;81:341-54.
64. Liu Q, Ju W, Crowston JG, et al. Oxidative stress Is an early event in hydrostatic pressure-induced retinal ganglion cell damage. IOVS 2007 48: 4580-4589.
65. Mandel S, Amit T, Reznichenko L, et al. Green Tea catechins as Brain-Permeable, natural iron chelators-antioxidants for the treatment of neurodegenerative disorders. Mol Nutr Food Res 2006;50:229-234.
66. Sutherland BA, Rahman RM, Appleton I. Mechanisms of action of green tea chatechins, with a focus on ischemia-Induced neurodegeneration. J Nutr Biochem 2006;17:291-306.
67. Zhao B. Natural antioxidants for neurodegenerative diseases. Mol Neurobiol 2005;31:283-293.
68. Yen WJ, Wang BS, Chang LW, Duh PD. Antioxidant properties of roasted coffee residues. J Agric Food Chem 2005;53:2658-2663.
69. Miller KB, Stuart DA, Smith NL, et al. Antioxidant activity and polyphenol and procyanidin contents of selected commercially available cocoa-containing and chocolate products in the United States. J Agric Food Chem 2006;54:4062-4068.
70. Haufschild T, Kaiser HJ, Preisig T, et al. Influence of red wine on visual function and Endothelin-1 plasma level in a patient with optic neuritis. Ann Neurol 2003;53:825-826.
71. Singleton VL, Esau P. Phenolic substances in grapes and wine, and their significance. Adv Food Res Suppl 1969;1:1-261.
72. Rhone M, Basu A. Phytochemicals and Age-jRelated eye diseases. Nutr Rev 2008;66:465-472.
73. Presenter: JoAnn Giaconi, M.D. Nutritional associations with glaucoma among older black women. American Glaucoma Society 18th Annual Meeting. March 2008 Washington, D.C.
74. Feinglos MN, Totten SE. Are you what you eat, or how much you eat? The case of Type 2 Diabetes Mellitus. Arch Intern Med. 2008;168:1485-1486.
75. O'Keefe JH, Gheewala NM, O'Keefe JO. Dietary strategies for improving post-prandial glucose, lipids, inflammation, and cardiovascular health. J Am Coll Cardiol 2008;51:249-255.
76. Karim M, McCormick K, Kappagoda CT. Effects of cocoa extracts on Endothelium-Dependent relaxation. J Nutr 2000;130:2105S-2108S.
77. Taubert D, Roesen R, Lehmann C, et al. Effects of low habitual cocoa intake on blood pressure and bioactive nitric oxide: A Randomized Controlled Trial. JAMA. 2007;298:49-60.
78. Larsson SC, Mannisto S, Virtanen MJ, et al. Coffee and tea consumption and risk of stroke subtypes in male smokers. Stroke 2008;39:1681-1687.
79. Cochrane Database Syst Rev. Published online July 18, 2007.
80. Meyerhardt JA, Niedzwiecki D, Hollis D, et al. Association of dietary patterns with cancer recurrence and survival in patients with Stage III colon cancer. JAMA. 2007;298:754-764

1RE PARTIE

Incidence du régime alimentaire et du mode de vie sur les affections systémiques et oculaires[2008]

PAR LARRY J ALEXANDER, OD, FAAO

Introduction générale et importance du régime alimentaire

Fort d'une pratique de plusieurs années dans les soins de santé, après avoir constaté une augmentation des maladies des complexes immuns, des troubles inflammatoires et des affections dégénératives, j'estime qu'il est temps que le milieu des soins de santé amorce une analyse interactive – Cross-Talk[MC]. D'après une étude récente, un mode vie sain combinant l'abandon de la cigarette, le maintien d'un poids santé, un régime équilibré, la consommation modérée d'alcool et l'exercice quotidien réduirait les accidents ischémiques cérébraux de près de moitié chez les hommes comme chez les femmes[1]. La communication de cette information essentielle auprès de tous les fournisseurs de soins de santé est importante pour assurer la santé à long terme de la population. L'initiative Cross-Talk[MC] s'inscrit dans cet ordre d'idées.

La plupart des spécialisations et des sous-spécialisations ont leurs revues dans lesquelles sont publiées leurs découvertes sans que les conclusions ne soient communiquées aux autres branches de la médecine, et ce, même si elles pouvaient avoir une incidence directe sur la gestion d'autres systèmes et appareils de l'organisme. À titre d'exemple, combien de praticiens traitant les cas de zona ont lu l'article suivant?

Herpes zoster. The treatment and prevention of neuralgia with adenosine monophosphate.[2]

(Zona : le traitement et la prévention de la névralgie par l'adénosine monophosphate)

[Traduction] Trente-deux adultes ont pris part à un essai aléatoire à double insu, avec groupe témoin, qui consistait en des injections intramusculaires d'adénosine monophosphate (AMP) en gel, trois fois par semaine pendant quatre semaines, pour traiter le zona. L'AMP a entraîné une diminution modérée de la douleur peu après le début du traitement, en plus de réduire la période de desquamation et de favoriser une guérison plus rapide de la peau que dans le groupe témoin. Le traitement à l'AMP a réduit l'excrétion du virus et éliminé le virus plus rapidement que dans le groupe témoin. Au terme de la première période de traitement de quatre semaines, 88 % des patients traités à l'AMP n'éprouvaient plus de douleur, par opposition à seulement 43 % de ceux du groupe témoin. Après quatre semaines, tous les patients éprouvant encore de la douleur ont commencé à recevoir un traitement à l'AMP sans infraction au code. Aucun ne ressentait encore de la douleur dans les trois semaines suivant le début du traitement. Ils n'ont connu aucune récurrence de la douleur ou des lésions pendant trois à dix-huit mois après la fin du traitement. Ni effet secondaire ni phénomène de toxicité n'ont été associés à l'AMP, un métabolite cellulaire naturel, durant et après le traitement.

L'œil est tout désigné pour illustrer l'incidence que peut exercer une spécialisation sur une autre. Ainsi, les cardiologues sont bien conscients du rôle possible de certains suppléments nutritifs dans la gestion des troubles vasculaires. Une modification oculaire d'origine vasculaire peut entraîner un certain nombre de troubles, comme le glaucome et la dégénérescence maculaire. Il y a donc lieu de se demander pourquoi les professionnels des soins oculaires ne font pas une incursion du côté de la cardiologie dans leur réflexion. En dermatologie, on s'est aperçu que les niveaux de coenzyme Q10 (CoQ10) indiquaient la probabilité d'une progression éventuelle du mélanome malin, l'une des affections les plus redoutées pour la santé des yeux.

Il est particulièrement intéressant de s'arrêter à l'influence du contexte social sur le plan comportemental en ce qui a trait à l'apparition de déficiences nutritionnelles. La pauvreté, les effets secondaires des médicaments, l'abus de médicaments, l'alcoolisme, le pontage gastrique (chirurgie bariatrique), une alimentation riche en matières grasses et la simple ignorance peuvent ouvrir

la voie à une foule de maladies et de troubles. Aussi devons-nous intégrer les problèmes d'origine alimentaire à notre réflexion sur le développement des maladies oculaires.[3] La diminution de la survie des participants à l'étude AREDS (Age-Related Eye Disease Study) qui étaient atteints d'une dégénérescence maculaire liée à l'âge (DMA) et de cataractes permet de penser que ces affections reflétaient davantage un état systémique que des processus uniquement locaux.[4] La carence en vitamine A peut à tout le moins être associée à une malabsorption de matières grasses, elle-même peut-être liée à une chirurgie bariatrique[5] qui influera ensuite directement sur la genèse du syndrome de l'œil sec. La carence en vitamine B12 et en acide folique est également associée à un problème de malabsorption, en plus d'être connue pour ses effets secondaires oculaires fortement liés à l'hyperhomocystéinémie, qui représente une importante menace cardiovasculaire.[6-9] En dépit d'un régime prétendument sain, de 10 % à 14 % des Américains accusent une carence en vitamine C[10], et une carence en vitamine B12 a été prouvée en laboratoire chez jusqu'à 15 % des adultes âgés de plus de 60 ans[6]. Le traitement de la majorité des patients au moyen de ces nutriments aisément accessibles suppose de bons choix alimentaires ou la consommation de suppléments ainsi que de l'exercice et une modification générale des comportements, notamment l'abandon de la cigarette et la réduction de la consommation d'alcool. Il est toujours étonnant de voir que les patients croient encore à l'existence d'une cure miracle. Une récente étude montre que, malgré une alimentation riche en acides gras oméga-3, les patients inuits de l'Alaska sont aux prises avec une athérosclérose infraclinique à un jeune âge, probablement imputable, en grande partie, à un usage excessif du tabac[11]. L'idée centrale tient à l'importance de la synergie, plus valable qu'une approche axée sur une monothérapie, pour la gestion de la plupart des affections chroniques, neurodégénératives et inflammatoires. La « modulation » (équilibre) est le maître mot pour améliorer l'état de santé et réduire les risques. Rappelons que les changements comportementaux radicaux et les thérapies déséquilibrées peuvent créer plus de tort que de bien. La combinaison de l'exercice et de thérapies est à l'origine de récents « eurêkas ». De fait, si l'exercice régulier et la consommation d'acides gras oméga-3 à longue chaîne, tirés du poisson ou de l'huile de poisson, peuvent à eux seuls améliorer la santé cardiovasculaire et métabolique, leur combinaison s'avère plus efficace *(American Journal of Clinical Nutrition*, 2007, vol. 85, p. 1267). Il n'existe pas de cure miracle, mais une attitude et un style de vie propices à l'amélioration de la santé s'imposent. Bien que nous nous attendions à ce que chaque patient modifie ses comportements pour augmenter ses chances de connaître une meilleure santé, nous devons savoir que cela ne se produira pas facilement et que nous serons appelés à devenir des « conseillers personnels » auprès d'eux en matière de santé. Une récente étude corrobore cette conclusion, mentionnant que les modes de vie sains comprennent l'abandon de la cigarette, le maintien d'un bon IMC, une consommation d'alcool modérée et l'exercice quotidien. Chez les hommes et les femmes, l'adoption de modes de vie sains est associée à une réduction de 80 % du risque d'accident vasculaire cérébral[1].

Le fait qu'un fournisseur de soins de santé ignore souvent la mesure dans laquelle son patient utilise des produits non pharmaceutiques pose une autre question importante au sujet de la consommation de suppléments. Il arrive que des patients utilisant des anticoagulants ne déclarent pas leur consommation de vitamine E et de gingko biloba. La consommation de nombreux suppléments aura une incidence certaine sur les temps de prothrombine, entraînant même une capacité accrue de saigner. D'après une enquête réalisée en 1999, près de 49 % des Américains adultes auraient utilisé des produits à base d'herbes médicinales au cours de l'année précédente. Or, il a été prouvé que jusqu'à 31 % des patients qui utilisent ces produits les combinent avec des médicaments d'ordonnance, et qu'environ 70 % de ces derniers patients ne déclarent pas de façon régulière la consommation de tels produits à leurs fournisseurs de soins de santé.[12-13]

Un autre rapport instructif fait état du recours des personnes atteintes de cancer aux médecines douces et autres approches thérapeutiques. La prière et d'autres pratiques spirituelles seraient les approches les plus fréquentes, déclarées par 61,4 % des survivants. Viendraient ensuite la relaxation (44,3 %), la guérison par la foi (42,4 %), la consommation de suppléments nutritifs et de vitamines (40,1 %), la méditation (15 %), la consultation religieuse (11,3 %), les massages (11,2 %) et la fréquentation de groupes de soutien (9,7 %). L'hypnose était une méthode moins

susceptible d'être utilisée (0,4 %), un peu moins souvent que la thérapie par rétroaction biologique (1,0 %) et l'acupuncture ou l'acupressure (1,2 %).[14]

La validité des déclarations issues d'études scientifiques constitue aussi une question importante. La présente analyse vise à fournir au lecteur des éléments scientifiques pour mieux comprendre les effets possibles des problèmes comportementaux sur la genèse des affections systémiques et oculaires. Aussi faut-il garder à l'esprit que de nombreuses déclarations prenant appui sur une foule d'études n'ont pas encore été prouvées. Notons qu'il est toutefois difficile d'établir des preuves incontestables en raison de la complexité des essais menés sur des sujets humains. L'extrapolation de certains des concepts orientant une recherche de base pour une éventuelle application clinique est possible, mais un optimisme prudent est de mise jusqu'à l'obtention de résultats découlant d'essais cliniques. Toute analyse relative à des rapports publiés doit tenir compte de la conception de l'étude en soi. À cet égard, dans un récent éditorial publié dans *Ophthalmology Times*, le 15 février 2006, Peter McDonnell soulève une question : doit-on croire les plus récents résultats examinés par des pairs? Il fait référence à un article rédigé par Ioannidis, dans lequel celui-ci indique qu'il a examiné 49 articles de recherche « importants », publiés dans les principales revues médicales entre 1990 et 2003 et par la suite cités un millier de fois, pour constater que plus de 33 % d'entre eux étaient finalement dans l'erreur.[15-17] Pour faire avancer tout modèle éducationnel, il est essentiel de procéder à un examen critique des idées nouvelles avant de transmettre l'information sous-jacente aux équipes de prestation de soins de santé généraux. Par ailleurs, nous semblons assister à une augmentation des cas de fraude à l'étape de la publication des essais, et les rétractations écrites n'ont lieu que longtemps après la constatation des résultats en découlant[18-19], sans compter le nombre excessif de conclusions cliniques apparemment importantes[20]. À ce chapitre, les auteurs d'une étude canadienne formulaient des propos intéressants au sujet de la recherche parrainée par l'industrie sur la prostaglandine. Ils se sont aperçus que les études financées par l'industrie étaient considérablement plus susceptibles (19 études sur 27 = 70 %) de déboucher sur des conclusions abstraites, qui ne correspondaient pas aux principaux résultats d'études non financées par l'industrie (2 études sur 12 – 17 %, P = .002). Dans 89 % des cas, les conclusions des résumés des études financées par l'industrie étaient favorables au médicament produit par la compagnie pharmaceutique[21].

Cette mise en garde ayant été faite pour encourager un optimisme prudent, l'examen de la littérature relative à l'interaction des spécialisations médicales (Cross-Talk[MC]) peut commencer.

Régime alimentaire propice aux effets anti-inflammatoires, à la neuroprotection et à l'amélioration globale de la santé oculaire

Si le regard est le miroir de l'âme, il en dit aussi beaucoup sur le fonctionnement du corps. À terme, la santé oculaire est révélatrice de tous les aspects de la santé, bien que la relation causale directe ne tombe pas sous le sens en raison des effets cumulatifs des comportements d'une personne. La qualité du régime alimentaire et le fait de se mettre à la diète ont tous deux un effet sur la santé des yeux. Un régime alimentaire déséquilibré, l'interaction médicamenteuse et les phénomènes de toxicité créent des problèmes de santé à l'intérieur des systèmes cardiovasculaire, endocrinien et neurologique, qui se répercuteront sur la fonction oculaire. En outre, les diètes radicales et la chirurgie bariatrique déroberont au corps les nutriments essentiels à son fonctionnement. La présente analyse abordera quelques faits saillants relativement au régime alimentaire, à la modification des comportements et à la consommation de suppléments, mais son but consiste surtout à faire valoir l'importance de la coordination des efforts de prévention et de gestion des affections systémiques et oculaires.

L'excès de poids ou l'obésité ainsi qu'un régime alimentaire déséquilibré apparaissent comme des menaces constantes à la santé systémique et oculaire.[22-23] Le régime alimentaire influe à la fois sur la morbidité et la mortalité, et la prudence incite à maintenir un poids normal et à consommer des nutriments sains. Certaines études établissent des liens entre l'obésité et la dégénérescence maculaire.[24] Il est notamment mentionné que l'obésité en général, plus particulièrement abdominale, accroît le risque de progression d'une DMA avancée, alors que l'augmentation de l'activité physique tend à le faire baisser.[25-26] Il est ironique de constater qu'un patient trop mince chez lequel on soupçonne une malnutri-

tion s'expose également à un risque accru.[27] Un autre rapport récent indique que les facteurs de risque de maladie cardiovasculaire chez les Latino-Américains peuvent influer sur la DMA avancée.[28] Il n'y a pas lieu de s'en étonner depuis les premiers travaux de Richer, qui ont démontré que les facteurs de risque de maladie cardiovasculaire, y compris les niveaux de fer sérique, contribuaient à la progression de la DMA.[29-30] Les autres facteurs de risque souvent associés aux maladies du cœur, comme le tabagisme et les changements à la composition du sang, peuvent aussi être modifiés dans notre base de patients.[31-35] Des études attestent également du fait que l'obésité est actuellement liée à une dégénérescence pigmentaire de la macula, qui pourrait être attribuable à la concurrence inhérente du tissu adipeux.[36-38] Les taux sériques de lutéine et de zéaxanthine sont les véritables mesures de l'efficacité des effets de protection du régime alimentaire, et ces deux taux sont inférieurs lorsqu'il y a obésité et diabète.[36] Si toutes ces études ne concluent pas de façon absolue au besoin d'une diète d'un point de vue scientifique, elles souligent l'importance de l'abandon de la cigarette pour réduire le risque de DMA.[39]

Beaucoup d'analyses ont porté sur le régime alimentaire par rapport au développement des cataractes. Bien qu'elles soient très ciblées, certaines ont établi un lien entre le syndrome métabolique et la genèse des cataractes.[40-41] Tout indique qu'il existe un lien entre le stress oxydatif et la formation de cataractes si, encore une fois, un problème de tabagisme est en cause.[42] En général, il s'avère aussi que l'obésité indique une probabilité accrue de développer une cataracte, bien que ce marqueur soit légèrement imprévisible en fonction du type de cataracte.[43-45] Si l'indice de masse corporelle (IMC), l'obésité abdominale et le diabète sont plus élevés, l'incidence d'une cataracte corticale et d'une cataracte sous-capsulaire postérieure l'est aussi.[46-47]

Le lien entre le diabète et l'obésité (plus particulièrement le syndrome métabolique) est incontestable.[48-51] Le syndrome métabolique dénote l'existence d'une série de facteurs de risque naturellement reliés, notamment l'obésité, une pression artérielle élevée, une résistance à l'insuline, la dyslipidémie, un état proinflammatoire et un état prothrombotique. Ce scénario (syndrome métabolique) peut entraîner plusieurs problèmes de flux vasculaire rétinien dans l'œil. [52] Le lien avec la rétinopathie diabétique fait l'objet d'une plus grande circonspection, mais des études ont associé la microvasculopathie rétinienne au syndrome métabolique.[49, 53] L'inhibition des médiateurs inflammatoires intervient aussi dans la réduction des risques de diabète[54], et des changements au régime alimentaire peuvent la favoriser. Une diète axée sur le syndrome métabolique peut constituer la solution à explorer pour réduire le risque de rétinopathie diabétique, mais les essais cliniques doivent corroborer cette conclusion. De plus, il importe de se pencher sur d'autres facteurs qui peuvent accroître le stress oxydatif et diminuer l'approvisionnement de l'œil en sang oxygéné, comme le tabagisme et l'apnée du sommeil.

Il y a également une association à faire entre les problèmes de poids et le glaucome. Il ressort sans équivoque de certaines études qu'un lien existe entre, d'une part, la résistance à l'insuline et le syndrome métabolique et, d'autre part, la pression intraoculaire.[55] L'indice de masse corporelle semble lié à une pression intraoculaire élevée.[56-59] Il va sans dire que la première réaction des cliniciens face à un tel fait serait d'examiner la taille du cou ainsi que la pression positive pour conclure qu'il s'agit de facteurs associés à l'apnée du sommeil, qui correspondent à cette analyse.[60-61] La relation entre l'élévation de la pression du liquide céphalorachidien, l'hypertension intracrânienne idiopathique, les concentrations sériques de cortisol et l'apnée du sommeil forme un scénario digne d'intérêt en ce qui concerne la pression intraoculaire élevée.[62] Bien qu'une analyse approfondie d'un point de vue scientifique s'impose, il semble, assez logiquement, que l'obésité ait un lien avec le glaucome, si celui-ci n'est pas imputable à un autre état physique restreint.

Cordain soutient que le régime alimentaire occidental a évolué d'une façon qui ne répond pas à nos besoins biologiques de base.[63] Cette affirmation s'appuie sur l'idée que nous possédons encore les gènes de l'homme des cavernes (génotype), lesquels exigent une alimentation de type paléolithique qui ne correspond pas à notre régime alimentaire actuel. Celui-ci, jugé aberrant, créerait un stress oxydatif qui influerait à la fois sur les réactions inflammatoires et le système immunitaire. Dans le cas d'un glaucome, le stress oxydatif mène à des modifications aux cellules ganglionnaires de la rétine, qui précipitent la progression des

dommages. L'obtention de résultats similaires est vraisemblable pour d'autres troubles oculaires. Sans une conversion appropriée de ces radicaux, le stress empoisonnerait le système.[64] Les produits phytochimiques, tels le thé vert ou noir[65-67], le café[68], le chocolat noir[69] et le vin rouge[70-71], contiennent des composés polyphénoliques qui agissent comme des phagocytes de radicaux libres.[72] Selon un récent article axé sur un sous-groupe de femmes noires, la consommation de trois portions ou plus de fruits par jour entraînerait une diminution de 79 % du risque de glaucome, par comparaison à celles en consommant moins d'une par jour.[73] Une autre étude portant sur des femmes afro-américaines conclut, comme on pouvait s'y attendre, à l'existence d'un lien entre, d'une part, une consommation plus élevée de boissons gazeuses et de boissons aux fruits et, d'autre part, une incidence accrue de diabète de type 2.[74] L'équilibre (MODULATION) est le mot d'ordre en ce qui a trait à l'alimentation en général, à la consommation de suppléments et à la modification des comportements.

Par ailleurs, une récente étude présente les recommandations suivantes pour adopter un régime anti-inflammatoire susceptible d'améliorer l'état de santé général et, de façon plus particulière, le système cardiovasculaire, dont l'incidence sur les troubles oculaires n'est plus à démontrer, ni le risque de développer des maladies neurodégénératives qui en découle. Très bons indicateurs de la présence d'une inflammation systémique, les niveaux de protéines C réactives seraient élevés dans de nombreux troubles oculaires. Un régime anti-inflammatoire peut s'avérer profitable à toute personne souffrant d'une affection accompagnée d'un nombre élevé de protéines C réactives.

« Ce régime anti-inflammatoire doit être considéré comme le moyen de prévention principal ou secondaire de la coronaropathie et du diabète.[75] »

L'indice glycémique d'un aliment est défini comme la surface incrémentielle se trouvant sous la courbe de glucose postprandial associée à l'ingestion d'une portion de 50 g d'un aliment particulier, par opposition à celle de 50 g de glucose par voie orale. Les glucides idéaux, c'est-à-dire ceux dont l'indice glycémique est faible, comprennent les légumes à feuilles vertes, comme le brocoli et l'épinard, et les fruits, tels le pamplemousse et les cerises. Optez pour des glucides à haute teneur en fibres et dont l'indice glycémique est faible – légumes, fruits, grains entiers, légumineuses et noix.

Une consommation excessive de glucides transformés provoque un cycle vicieux de pics transitoires dans les niveaux de glycémie, en plus d'entraîner une augmentation de la production d'insuline et de l'hypoglycémie réactive. Évitez les aliments et les boissons très transformés, plus particulièrement ceux contenant du sucre, du sirop de glucose à haute teneur en fructose, de la farine blanche ou des gras trans.

Les petits fruits, le chocolat noir, le vin rouge, le thé et les grenades réduisent le stress oxydant postprandial ainsi que l'inflammation. Les fèves de cacao contiennent une sous-catégorie de flavonoïdes dont on a prouvé la capacité à augmenter la quantité d'eNOS et, par le fait même, de NO. Cette propriété améliore la vasorelaxation d'origine endothéliale.[76] D'après une étude, un carré de chocolat noir comporte 6,3 g et ne représente que 30 kcal par jour, et des études antérieures ont montré que 100 g de chocolat noir abaissent la pression artérielle de 12/9 mm Hg, mais risquent d'accroître l'apport calorique.[77]

Le café contient des antioxydants et peut améliorer la sensibilité à l'insuline. La consommation de thé noir réduit l'activation plaquettaire et la concentration plasmique de protéines C réactives. Cependant, une recherche antérieure n'a pas conclu à une réduction constante du risque d'accident vasculaire cérébral associé à la consommation de café ou de thé. Une étude tend à indiquer qu'une consommation plus élevée de café et de thé peut réduire le risque d'infarctus cérébral chez les hommes qui fument, mais pas celui d'hémorragie intracrânienne.[78]

Ajoutée à un repas dont l'indice glycémique est élevé, la cannelle ralentit la vidange gastrique et réduit l'excursion de glucose postprandial.

Les noix ralentissent également la vidange gastrique et peuvent réduire de moitié l'effet des glucides dont l'indice glycémique est élevé. Elles diminuent également les dommages imputables aux protéines oxydatives postprandiales. La consommation de noix au moins cinq fois par semaine peut faire baisser les risques de coronaropathie et le diabète dans une proportion de 20 % à 50 %. Mangez environ une poignée de noix chaque jour (un poing fermé), et accompagnez-les de légumes, de grains, de petits fruits ou d'autres fruits.

Le vinaigre peut réduire la glycémie postprandiale, en plus d'accroître la satiété. Mangez chaque jour de la salade de feuilles vertes, relevée d'une vinaigrette composée de vinaigre et d'huile d'olive.

Les protéines maigres réduisent l'excursion du glucose postprandial et améliorent la satiété. Ces protéines se trouvent dans les blancs d'œuf, la viande de gibier, la poitrine de volaille sans la peau et les protéines de lactosérum ou toute source de protéines laitières non grasses. Consommez des protéines maigres au cours des trois repas de la journée.

Le fait de consommer une boisson alcoolisée (0,5 % à 1 %) par jour chez les femmes et d'une à deux boissons alcoolisées par jour chez les hommes peut réduire le risque de maladie cardiovasculaire. La consommation d'une à deux boissons avant un repas peut réduire les taux de glucose postprandial et d'insuline. Cependant, des quantités plus élevées peuvent nuire au métabolisme du glucose.

Selon le niveau d'intensité, l'exercice abaisse les taux de glucose et de triglycérides. Faites de l'activité physique au moins 30 minutes par jour, à une intensité au moins modérée.

Maintenez un poids normal et évitez de vous trouver en surpoids ou dans un état d'obésité. La circonférence de la taille ne devrait jamais dépasser la moitié de la grandeur d'une personne.

Il a été prouvé qu'un régime composé d'aliments à faible indice glycémique était propice à la perte de poids et à l'amélioration du profil lipidique.[79] De plus, les femmes du quintile le plus élevé d'un groupe dont le régime était composé d'aliments à forte teneur en lipides et à faible teneur en fibres s'exposaient à un risque relativement plus élevé de développer un cancer du colon (1,46), comparativement à celles du quintile inférieur. En revanche, la consommation d'aliments à haute teneur en fibres et de protéines saines est associée à une réduction des taux de cancer du colon. Le régime alimentaire n'aurait pas une forte incidence sur le risque de cancer rectal[80].

Idéalement, nous serions tous des adeptes du régime paléolithique et de l'exercice, nous maintiendrions un poids sain et nous ne consommerions pas de substances potentiellement toxiques. L'utilisation de suppléments serait alors totalement futile. Cependant, il y a loin de la coupe aux lèvres, et même les personnes les plus exemplaires sombrent parfois dans un mode de vie qui laisse à désirer, d'où l'importance des rappels, notamment pour la consommation de suppléments. Il est également essentiel, par rapport à toutes ces considérations, que nous tenions compte des toxicités et des interactions éventuelles.

La deuxième partie de cet article portera sur les avantages déclarés de certains nutriments et suppléments.

Le Dr Alexander ne touche aucune compensation auprès d'entreprises spécialisées dans les suppléments nutritifs. Il agit comme conseiller non rémunéré auprès de Biosyntrx. Il dirige une entreprise d'imagerie numérique, Clinical Education for Optovue Inc., qui produit le RTVue.

CARACTÉRISTIQUES DU SYNDROME MÉTABOLIQUE :

1. Obésité abdominale;
2. Dyslipidémie athérogène;
3. Pression artérielle élevée;
4. Taux d'insuline élevés – plus de 10 :
   - a. Augmentation des matières grasses dans les cellules;
   - b. Accroissement du stockage de gras;
   - c. Stimulation des cellules des muscles lisses de la paroi vasculaire;
   - d. Hausse de la production de mauvais types d'éicosanoïdes (EC) – hormones intracellulaires;
   - e. Les EC de type 1, bons, risquent d'être inhibés par une trop grande quantité de graines de lin;
   - f. Les EC de type 2, de mauvais glucagons, sont d'importants inhibiteurs;
5. Rétention rénale des liquides
   Le glucagon agit comme anti-insuline, et les aliments à haute teneur en protéines et à faible teneur en glucides le stimulent.
6. Production d'une quantité élevée de médiateurs inflammatoires, mesurée en fonction des taux de protéines réactives C.

Références

1. D. Lie, « Overall healthy lifestyle significantly reduces stroke risk », *Medscapte CME*, 15 août 2008, en ligne le 11 août 2008.
2. S. H. Sklar, W. T. Blue, J.E. Alexander et coll. « Herpes zoster. The treatment and prevention of neuralgia with adenosine monophosphate », *Journal of the American Medical Association*, 1985, vol. 253, nº 10, p. 1427-1430.

3. G. Kullman, J.L. Bennett, N. Mandava et M. Kahook, « Nutritional Deficiencies », *Glaucoma Today*, 2007, nº 5, p. 33-35.
4. « AREDS Report No. 13: AREDS Research Group associations of mortality with ocular disorders and an intervention of high-dose antioxidants and zinc in the Age-Related Eye Disease Study », *Archives of Ophthalmology*, 2004, nº 122, p. 716-726.
5. Y. Spits, J.J. De Laey et B.P. Leroy, « Rapid recovery of night blindness due to obesity surgery after vitamin A repletion therapy », *British Journal of Ophthalmology*, 2004, vol. 88, no 4, p. 583-585.
6. E. Andràs, S. Affenberger, S. Vinzio et coll. « Food-cobalimin malabsorption in elderly patients: clinical manifestations and treatment », *American Journal of Medicine*, 2005, vol. 118, p. 1154-1159.
7. A. Hvas et E. Nexo, « Diagnosis and treatment of vitamin B_{12} deficiency—an update », *Haematologica*, 2006, vol. 91, p. 1506-1512.
8. A. A. Sadun, « Metabolic optic neuropathies », *Semin Ophthalmol*, 2002, vol. 17, p. 29-32.
9. C.M. Pfeiffer, S.P. Caudill, E.W. Gunter et coll., « Biochemical indicators of B vitamin status in the US population after folic acid fortification: results from the National Health and Nutrition Examination Survey 1999-2000 », *American Journal of Clinical Nutrition*, 2005, vol. 82, p. 442-450.
10. J.S. Hampl, C.A. Taylor et C.S. Johnston, « Vitamin C deficiency and depletion in the United States: the Third National Health and Nutrition Examination Survey, 1988 to 1994 », *American Journal of Public Health*, 2004, vol. 94, p. 870-875.
11. A. Cutchins, M.J. Roman, R.B. Devereux et coll. « Prevalence and correlates of sub-clinical atherosclerosis in Alaska Eskimos: The GOCADAN study », *Stroke*, 2008 (DOI:10.1161/STROKEAHA.108.519199), accessible en ligne à stroke.ahajournals.org.
12. J.H. Wirth, J.C. Hudgins et J.A. Paice, « Use of herbal therapies to relieve pain: A review of efficacy and adverse effects », *Pain Management Nursing*, 2005, vol. 6, p.145-167.
13. W. Abebe, « Herbal medication: Potential for adverse interactions with analgesic drugs », *Journal of Clinical Pharmacy & Therapeutics*, 2002, vol. 27, p. 391-401.
14. T. Gansler, C. Kaw, C. Crammer et T. Smith, « A population-based study of prevalence of complementary methods use by cancer survivors: a report from the American Cancer Society's studies of cancer survivors », *Cancer*, 2008, vol.113, p.1048-1057.
15. V.M. Montori, P.J. Devereaux, N.K. Adhikari et coll., « Randomized trials stopped early for benefit: a systematic review », *Journal of the American Medical Association*, 2005, vol. 294, p. 2203–2209.
16. J.P. Ioannidis, « Contradicted and initially stronger effects in highly cited clinical research », *Journal of the American Medical Association*, 2005, vol. 294, p. 218-228.
17. J.P. Ioannidis, « Limitations are not properly acknowledged in the scientific literature », *Journal of Clinical Epidemiology*, 2007, vol. 60, p. 324-329.
18. N.A. Trikalinos, E. Evangelou et J.P. Ioannidis, « Falsified papers in high-impact journals were slow to retract and indistinguishable from nonfraudulent papers », *Journal of Clinical Epidemiology*, 2008, vol. 61, p. 464-470.
19. J.P. Ioannidis, « Effect of the Statistical Significance of Results on the Time to Completion and Publication of Randomized Efficacy Trials », *Journal of the American Medical Association*, 1998, vol. 279, p. 281-286.
20. J.P. Ioannidis et T.A. Trikalinos, « An exploratory test for an excess of significant findings », *Clinical Trials*, 2007, vol. 4, p. 245-253.
21. Programme et résumés de la réunion annuelle de l'Association for Research in Vision and Ophthalmology, du 27 avril au 1er mai 2008, Fort Lauderdale, Floride (résumé 1219).
22. N. Cheung et T.Y. Wong, « Obesity and eye diseases », *Survey of Ophthalmology*, 2007, vol. 52, p. 180-95.
23. A.V. Everitt, S.N. Hilmer, J.C. Brand-Miller et coll., « Dietary approaches that delay Age-Related diseases », *Clinical Interventions in Aging*, 2006, vol. 1, p.11-31.
24. L.P. Santos, J.R. Dinez, A.C. Leao et M.F. Sena, « Degeneração macular relacionada à idade: prevalência e fatores de risco em dois centros oftalmológicos de referência em Pernambuco », *Arquivos brasileiros de oftalmologia*, 2005, vol. 68, p. 229-233.
25. J.M. Seddon, J. Cote, N. Davis et B. Rosner, « Progression of Age-Related macular degeneration », *Archives of Ophthalmology*, 2003, vol. 121, p. 785-792.
26. H.A. Moeini, H. Masoudpour et H. Ghanbari, « A study of the relation between body mass index and the incidence of Age-Related macular degeneration », *British Journal of Ophthalmology*, 2005, vol. 89, p. 964-966.
27. D.A. Schaumberg, W.G. Christen, S.E. Hankinson et R.J. Glynn, « Body mass index and the incidence of visually significant Age-Related maculopathy in men », *Archives of Ophthalmology*, 2001, vol. 119, p. 1259-1264.
28. S. Fraser-Bell, J. Wu, R. Klein et coll., « Cardiovascular risk factors and age-related macular degeneration: the Los Angeles Latino Eye Study », *American Journal of Ophtalmology*, 2008, vol. 145, p. 308-316.
29. S. Richer, D. Rudy, L. Statkute et coll., « Serum iron, transferrin saturation, ferritin, and dietary data in age-related macular degeneration », *American Journal of Therapeutic*s, janvier-février 2002, vol. 9, nº 1, p. 25-28.
30. S. Richer, J. Devenport et J.C. Lang, « LAST II: Differential temporal responses of macular pigment optical density in patients with atrophic age-related macular degeneration to dietary supplementation with xanthophylls », *Optometry*, 2007, vol. 78, p. 213-219.
31. T.E. Clemons, R.C. Milton, R. Klein, J.M. Seddon et F.L. Ferris, « The Age Related Eye Disease Study Group. Risk factors for the incidence of advanced Age-Related Macular degeneration in the Age-Related Eye Disease Study (AREDS) » (rapport nº19 de l'AREDS), *Ophthalmology*, 2005, vol. 112, p. 533-539.
32. R. Klein, Y. Deng, B.E.K. Klein et coll., « Cardiovascular disease, its risk factors and treatment, and age-related macular degeneration: Women's health initiative sight exam ancillary study », *American Journal of Ophtalmology*, 2007, vol. 143, p. 473-483.
33. D.A. Schaumberg, S.E. Hankinson, Q. Guo et coll., « A prospective study of 2 major Age-Related macular degeneration susceptibility alleles

and interactions with modifiable risk factors », *Archives of Ophthalmology*, 2007, vol. 125, p. 55-62.
34. W. Smith, P. Mitchell, S.R. Leeder et J.J. Wang, « Plasma fibrinogen Levels, other cardiovascular risk factors, and Age-Related maculopathy », *Archives of Ophthalmology*, 1998, vol. 116, p. 583-587.
35. M. Drobek-Slowik, D. Karczewicz et K. Safranow, « The potential role of oxidative stress in the pathogenesis of the age-related macular degeneration (AMD) », Postepy Hig Med Dose, 2007, vol. 61, p. 28-37.
36. J.A. Mares, T.L. Rowe, D.M. Snoddery et coll., «CAREDS Macular Pigment Study Group and Investigators. Predictors of optical density of lutein and zeaxanthin in retinas of older women in the Carotenoids in Age-Related Eye Disease Study, an ancillary study of the Women's Health Initiative », American Journal of Clinical Nutrition, 2006, vol. 84, p. 1107-1122.
37. E.J. Johnson, « Obesity, Lutein metabolism, and Age-Related Macular degeneration: A Web of Connections », *Nutrition Reviews*, 2005, vol. 63, p. 9-15.
38. B.R. Hammond, T.A. Ciulla et M. Snodderly, « Macular pigment density is reduced in obese subjects », *Investigative Ophthalmology & Visual Science*, 2002, vol. 43, p. 47-50.
39. R.H. Guymer et E.W. Chong, « Modifiable risk factors for Age-Related macular degeneration », *Medical Journal of Australia*, 2006, vol. 184, p. 455-458.
40. F. Bojarskiene, L.R. Cerniauskiene, A. Paunksnis et D.I. Luksiene, « Association of metabolic syndrome components with cataract », *Medicina (Kaunas)*, 2006, vol. 42, p. 115-122.
41. A. Paunksnis, F. Bojarskiene, A. Cimbalas et coll., « Relation between cataract and metabolic syndrome and its components », *European Journal of Ophtalmology*, 2007, vol. 17, nº 4, p. 605-614.
42. H. Shichi, « Cataract formation and prevention », *Expert opinion on investigational drugs*, 2004, vol. 13, p. 691-701.
43. A. Paunksnis, F. Bojarskiene, A. Cimbalas et coll., « Relation between cataract and metabolic syndrome and Its components », *European Journal of Ophtalmology*, 2007, vol. 17, p. 605-614.
44. E. Navarro, L. Butierrez, C. Valero et coll., « Prevalence and risk factors of Lens Opacities in the Elderly in Cuenca, Spain », *European Journal of Ophtalmology*, 2007, vol. 17, p. 29-37.
45. T.M. Kuang, SY Tsai, W.M. Hsu et coll., « Body mass index and Age-Related cataract; the Shihpai Eye Study », *Archives of Ophthalmology*, 2005, vol. 123, p. 1109-1114.
46. R. Hiller, M.J. Podgor, R.D. Sperduto et coll., « A longitudinal study of body mass index and lens opacities. The Framingham Studies », *Ophthalmology*, 1998, vol. 105, p. 1244-1250.
47. P.F. Jacques, S.M. Moeller, S.E. Hankinson et coll., « Weight status, abdominal adiposity, diabetes, and Early Age-Related lens opacities », *American Journal of Clinical Nutrition*, 2003, vol. 78, p. 400-405.
48. D.L. Burnet, L.D. Elliott, M.T. Quinn et coll., « Preventing diabetes in the clinical setting », *Journal of General Internal Medicine*, 2006, vol. 21, p. 84-93.
49. B.E. Klein, R. Klein et K.E. Lee, « Components of the metabolic syndrome and risk of cardiovascular disease and diabetes in Beaver Dam », *Diabetes Care*, 2002, vol. 25, p. 1790-1794.
50. M. B. Weber et K.M. Narayan, « Preventing Type 2 Diabetes: Genes or Lifestyle? », *Primary care diabetes*, 2008, vol. 2, p. 65-66.
51. S.M. Twigg, M.C. Kamp, T.M. Davis et coll., « Prediabetes: A Position Statement From the Australian Diabetes Society and Australian Diabetes Educators Association », *Medical Journal of Australia*, 2007, vol. 186, p. 461-465.
52. N. Kosanovic-Jakovic, B. Ivanovic, S. Milenkovic et coll., « Anterior ischemic optic neuropathy associated with metabolic syndrome », *Arquivos brasileiros de oftalmologia*, 2008, vol. 71, p. 62-66.
53. T.Y. Wong, F.M. Islam, R. Klein et coll., « Retinal vascular caliber, cardiovascular risk factors, and inflammation: The Multi-Ethnic Study of Atherosclerosis (MESA) », *Investigative Ophthalmology & Visual Science*, 2006, vol. 47, p. 2341-2350.
54. T.S. Kern, « Contributions of inflammatory processes to the development of the early stages of diabetic retinopathy », *Experimental Diabetes Research*, 2007, vol. 2007, 95103.
55. S.W.Oh, S. Lee, C. Park et D.J. Kim, « Elevated intraocular pressure is associated with insulin resistance and metabolic syndrome, *Diabetes/Metabolism Research and Reviews*, 2005, vol. 21, p. 434-440.
56. M. Yoshida, M. Ishikawa, A. Kokaze, et coll. « Association of Life-Style with intraocular pressure in Middle-Aged and older Japanese residents », *Japanese journal of ophthalmology*, 2003, vol. 47, p.191-198.
57. K. Mori, F. Ando, H. Nomura et coll., « Relationship between intraocular pressure and obesity in Japan », *International Journal of Epidemiology*, 2000, vol. 29, p. 661-666.
58. J.S. Lee, S.H. Lee, B.S. Oum et coll., « Relationship between intraocular pressure and systemic health parameters in a Korean population », *Clinical & experimental ophthalmology*, 2002, vol. 30, p. 237-241.
59. F. Memarzadeh, M. Ying-Lai, S.P. Azen et coll., « Associations with intraocular pressure in Latinos: the Los Angeles Latino Eye Study », *American Journal of Ophtalmology*, 2008, vol. 146, p. 69-76.
60. A.A. McNab, « The eye and sleep apnea », *Sleep medicine reviews*, 2007, vol. 11, p. 269-276.
61. S. Dhillon, C.M. Shapiro et J. Flanagan, « Sleep-Disordered breathing and effects on ocular health », *Journal canadien d'ophtalmologie*, 2007, vol. 42, p. 238-243.
62. A.B. Daniels, G.T. Liu, N.J. Volpe et coll., « Profiles of obesity, weight gain, and quality of life in idiopathic intracranial hypertension (pseudotumor cerebri) », *American Journal of Ophtalmology*, 2007, vol. 143, p. 635-641.
63. L. Cordain, S.B. Eaton, A. Sebastian et coll., « Origins and evolution of the western diet: health implications for the 21st century », *American Journal of Clinical Nutrition*, 2005, vol. 81, p. 341-354.
64. Q. Liu, W. Ju, J.G. Crowston et coll., « Oxidative stress Is an early event in hydrostatic pressure-induced retinal ganglion cell damage », *Investigative Ophthalmology & Visual Science*, 2007, vol. 48, p. 4580-4589.
65. S. Mandel, T. Amit, L. Reznichenko et coll., « Green Tea catechins as Brain-

Permeable, natural iron chelators-antioxidants for the treatment of neurodegenerative disorders », *Molecular Nutrition & Food Research*, 2006, vol. 50, p. 229-234.
66. B.A. Sutherland, R.M. Rahman et I. Appleton, « Mechanisms of action of green tea chatechins, with a focus on ischemia-Induced neurodegeneration », Journal of Nutritional Biochemistry, 2006, vol. 17, p. 291-306.
67. B. Zhao, « Natural antioxidants for neurodegenerative diseases », *Molecular Neurobiology*, 2005, vol. 31, p. 283-293.
68. W.J. Yen, B.S. Wang, L.W. Chang et P. D. Duh, « Antioxidant properties of roasted coffee residues », *Journal of Agricultural and Food Chemistry*, 2005, vol. 53, p. 2658-2663.
69. K.B. Miller, D.A. Stuart, N.L. Smith et coll., « Antioxidant activity and polyphenol and procyanidin contents of selected commercially available cocoa-containing and chocolate products in the United States », *Journal of Agricultural and Food Chemistry*, 2006, vol. 54, p. 4062-4068.
70. T. Haufschild, H.J. Kaiser, T. Preisig et coll., « Influence of red wine on visual function and Endothelin-1 plasma level in a patient with optic neuritis », *Annals of Neurology*, 2003, vol. 53, p. 825-826.
71. V.L. Singleton et P. Esau, « Phenolic substances in grapes and wine, and their significance », *Advances in Food Research* (supplément), 1969, vol. 1, p. 1-261.
72. M. Rhone et A. Basu, « Phytochemicals and Age-Related eye diseases », *Nutrition Reviews,* 2008, vol. 66, p. 465-472.
73. JoAnn Giaconi, M.D., animatrice, « Nutritional associations with glaucoma among older black women », 18e assemblée annuelle de l'American Glaucoma Society, mars 2008, Washington, D.C.
74. M.N. Feinglos et T.E. Totten, « Are you what you eat, or how much you eat? The case of Type 2 Diabetes Mellitus », *Archives in Internal Medicine*, 2008, vol.168, p. 1485-1486.
75. J.H. O'Keefe, N.M. Gheewala et J.O. O'Keefe, « Dietary strategies for improving post-prandial glucose, lipids, inflammation, and cardiovascular health », *Journal of the American College of Cardiology*, 2008, vol. 51, p. 249-255.
76. M. Karim, K. McCormick et C.T. Kappagoda, « Effects of cocoa extracts on Endothelium-Dependent relaxation », *Journal of Nutrition*, 2000, vol. 130, p. 2105S-2108S.
77. D. Taubert, R. Roesen, C. Lehmann C, et coll., « Effects of low habitual cocoa intake on blood pressure and bioactive nitric oxide: A Randomized Controlled Trial », *Journal of the American Medical Association*, 2007, vol. 298, p. 49-60.
78. S.C. Larsson, S. Mannisto, M.J. Virtanen et coll. « Coffee and tea consumption and risk of stroke subtypes in male smokers », *Stroke*, 2008, vol. 39, p. 1681-1687.
79. Base de données Cochrane Reviews, accessible en ligne depuis le 18 juillet 2007.
80. J.A. Meyerhardt, D. Niedzwiecki, D. Hollis et coll., « Association of dietary patterns with cancer recurrence and survival in patients with Stage III colon cancer », *Journal of the American Medical Association*, 2007, vol. 298, p. 754-764.

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A comparative study of the efficiency of chart versus computer-generated contrast sensitivity testing in glaucoma patients and controls.

BY SALLY CHETRIT, OD; MELISSA GAUDET, OD; WALTER WITTICH, MA; IAN L. BAILEY, OD, MS, FCOPTOM, FAAO; OLGA OVERBURY, PHD

As an integral part of a patient's primary care team, the optometrist plays a key role in the diagnosis and co-management of glaucoma. In Canada alone, one in 100 individuals over the age of 40 will develop glaucoma, a leading cause of blindness.[1] Vision loss caused by this ocular disease is preventable, thus emphasizing the importance of early diagnosis and treatment.

Glaucoma is a condition which, in most cases, is accompanied by an elevation of the intra-ocular pressure (IOP). This increase in IOP is a consequence of increased resistance in the eye's trabecular meshwork which, as a result, slows down the filtration of the aqueous humor. The elevated IOP causes mechanical damage and a decrease in blood perfusion at the level of retinal ganglion cells, and there is progressive optic nerve atrophy and visual damage.[2] The disease mechanism, however, is different for normal tension glaucoma.

While glaucoma may affect many visual functions, the ones of interest in this study were contrast sensitivity and spatial contrast sensitivity. Both these aspects of spatial vision can be very strong predictors of everyday performance and may provide insight into a patient's quality of life. Contrast sensitivity (CS) is defined as the measure of an individual's ability to detect a difference in luminance between two distinctly defined areas, whereas spatial contrast sensitivity (SCS) also considers the size of a target's spatial components[3], for example by using sinusoidal gratings with different spatial frequencies as the test targets.

The standard clinical evaluation of CS and SCS is executed by means of printed test charts. Even though contrast and spatial configurations are controlled very precisely, these tests require an external light source, which often makes it difficult to

ABRÉGÉ

Objectif : Le but de la présente étude était d'évaluer l'efficacité de tests de sensibilité au contraste imprimés ou générés par ordinateur chez des patients atteints de glaucome ou ayant une bonne vision. Méthode: Nous avons mesuré la sensibilité au contraste d'un groupe de 64 individus composé de 30 jeunes et 18 aînés (groupe contrôle) ainsi que 16 patients atteints de glaucome. Dans un premier temps, nous avons utilisé deux tests pour déterminer la sensibilité au contraste (SC). Le premier est l'échelle de MARS et le second, un test de Bailey informatisé comprenant une tâche de recherche de nombres. La deuxième étape consistait à déterminer la sensibilité au contraste spatial (SCS) pour des cibles de différentes fréquences spatiales. Pour ce faire, nous avons utilisé l'échelle Vistech ainsi qu'une tâche informatisée mise au point par Faubert. Résultats: Les résultats obtenus aux tests de SC démontrent un déclin chez les patients atteints de glaucome comparativement aux deux groupes contrôles ($p < 0.001$). Le test mesurant le SCS démontre un déclin de sensibilité chez les participants ainés ($p < 0.001$) ainsi que chez les patients atteints de glaucome ($p < 0.001$). Conclusion. Les données obtenues indiquent que le SCS semble supérieur pour différencier les trois groupes étudiés. Le test de Faubert ainsi que le Vistech mesurant la sensibilité au contraste à diverses fréquences spatiales démontrent un déclin statistiquement significatif dans la mesure de SC, particulièrement dans le spectre médian des fréquences spatiales. Comme ces différences sont importantes, elles deviennent plus faciles à détecter même lorsque le matériel informatique n'est pas calibré. De plus, ces tâches sont plus facilement exécutées. Ces résultats soulignent l'importance des différentes fréquences spatiales dans la détection et le dépistage du glaucome. D'autre part, le test informatique n'apporte pas plus de bénéfices que la version imprimée.

Mots clés : glaucome, sensibilité au contraste, sensibilité au contraste spatial, âge, procédures de test

ABSTRACT

ABSTRACT: Purpose. The goal of this study was to assess the efficiency of chart vs. computer-generated contrast sensitivity tests in glaucoma patients and controls. Methods. A total of 64 individuals (30 young controls, 18 older controls, 16 glaucoma patients) were tested for contrast sensitivity using 4 different tests. Two tests determined contrast sensitivity (CS) for detecting large targets with sharp borders. One of these was the MARS printed chart, and the other a computerized number search test by Bailey. The second assessment determined spatial contrast sensitivity (SCS) for sinusoidal grating targets at several spatial frequencies. One of these was the printed Vistech chart, the other a computerized test by Faubert. Results. Both CS tests showed a decrease in the glaucoma group versus both the control groups ($p < 0.001$). The tests for SCS demonstrated a decrease in sensitivity both with age ($p < 0.001$) and in the presence of glaucoma ($p < 0.001$) across all spatial frequencies. Conclusion. The data indicated that SCS was superior in separating the three study groups. Neither of the computer-generated tests was more sensitive than its printed counterpart.

Key Words: glaucoma, contrast sensitivity, spatial contrast sensitivity, age, testing procedures.

achieve adequate and uniform illumination across the chart. This problem can be overcome with the use of computer monitors to display CS and SCS stimuli. The quality of computer displays has improved in the last decade, making the standard PC capable of generating high-resolution images suitable for presenting test stimuli.[4]

The objective of the present study was to compare the efficiency of chart vs. computer-generated CS and SCS tests. Specifically, it was hypothesized that the computer-generated tests would prove to be more sensitive to visual defects caused by glaucoma.

Methods

Both the Health Sciences Research Ethics Committee at Université de Montréal and the Sir Mortimer B. Davis Jewish General Hospital Institutional Review Board approved the study protocol as adhering to the Tenets of the Declaration of Helsinki for research conducted with humans.

Participants

Sixty-four individuals participated in this study and were divided into 3 categories: Group 1 consisted of 30 young controls (mean age = 23 years, range 21-28), Group 2 consisted of 18 older controls (mean age = 60 years, range 50-80) and Group 3 consisted of 16 primary open-angle glaucoma patients (mean age = 71 years, range 51-85). Participants from Group 1 with normal or corrected-to-normal vision were recruited primarily from the student body of the *Université de Montréal, École d'Optométrie*. Group 2, recruited from the *Clinique Universitaire de la Vision*, consisted of patients with visual acuity better than 20/40 (6/12) and no identified ocular disorders. Group 3 was recruited from the patient population of the Ophthalmology Department at the SMBD Jewish General Hospital. These patients had received a diagnosis of primary open-angle glaucoma by a glaucoma specialist. For the purpose of the present study, a patient diagnosed with glaucoma was defined as one having an IOP greater than 21mmHg on at least two occasions, as well as a diagnostic visual field defect or pathological cup-to-disc ratio. Informed written consent was obtained from each subject before testing.

Materials & Procedure

The evaluation of CS and SCS was accomplished by using four different tests: the Faubert test (Montréal, Québec), the Vistech chart (Dayton, Ohio), the MARS chart (Chappaqua, NY), as well as the Bailey test (Berkeley, California). Every testing session began with an evaluation of the visual acuity using the ETDRS visual acuity chart (Lighthouse, NY), placed at a distance of 4 meters. All participants had visual acuity of 20/40 or better. For each participant, only one eye was tested. For Groups 1 and 2, the eye to be tested was chosen randomly. For Group 3, the tested eye was one diagnosed with glaucoma.

Evaluation of CS, using each of the four tests previously mentioned, followed visual acuity testing. The test order was randomized for each participant to avoid order effects from fatigue, variations in concentration and practice. For each test, the measurements were taken monocularly with the observer wearing the appropriate refractive correction.

The Faubert test is a computer-generated SCS test composed of sinusoidal gratings, varying in both spatial frequency (1.5, 3, 6, 12, and 18 cpd) and in contrast, whereby increments were adjusted using the

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1. Data on file. Alcon Laboratories, Inc. 2. Ketelson HA, Davis J, Meadows DL. Characterization of a novel polymeric artificial tear delivery system. Poster A139 presented at: ARVO; April 2008; Fort Lauderdale, FL.

QUEST procedure.[5] The observer's eye was 50 centimeters from a calibrated computer screen (mean luminance 55 cd/m^2). Each test target was presented for 750 milliseconds, after which the observers were asked to indicate the direction in which the gratings were oriented: vertically or horizontally. The observers were required to respond to each trial and they were obliged to guess when they were uncertain, even if the screen was perceived as uniformly grey (2-alternative forced-choice paradigm).

The Vistech chart, used to evaluate SCS, is composed of circular sine wave gratings, placed in five rows and nine columns. The five rows vary in spatial frequency (1.5, 3, 6, 12, and 18 cpd), while the 9 columns vary in contrast. This test was performed at a distance of 3 meters with the chart uniformly illuminated by an external light source (mean luminance 55 cd/m^2). Observers were instructed to begin with the top row, identifying the last patch in which gratings could be discerned and then determining the direction in which the gratings were tilted: left, right or up. Even if no direction could be perceived, the participant was asked to guess (3-alternative forced-choice paradigm). This procedure is known to provide improved accuracy. [6]

The MARS chart is a CS test consisting of 48 letters of equal size arranged in eight rows of six letters each. Contrast varies from 91% (-0.04 log units) to 1.2% (-1.92 log units) with the contrast of each letter decreasing by a factor of 0.04 log units. The chart was placed on a reading stand 50 centimeters from the patient (mean luminance 88 cd/m^2, spatial frequency of 1.83 cpd). Subjects were instructed to read all the letters on the chart, beginning with the highest contrast letter. Testing ended when two consecutive letters were missed. [7]

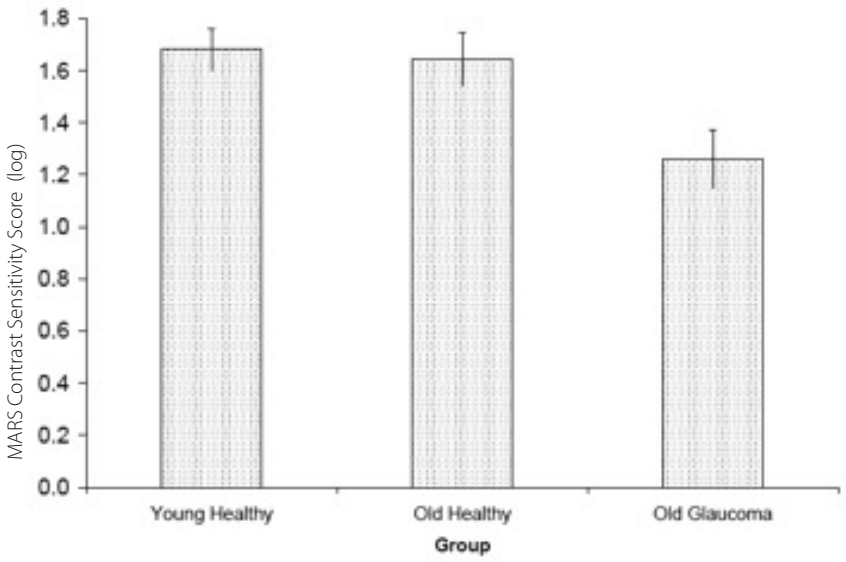

Figure 1: *Mean contrast sensitivity scores on the MARS chart across three subject groups. Error bars represent 95% confidence intervals. Glaucoma patients had statistically significantly lower scores compared to both control groups.*

The Bailey test is a computer-generated CS test that is in a prototype stage but is routinely used within the optometry clinics of the University of California at Berkeley for both clinical and research purposes. This is a test in which targets are the numbers 1 through 8 distributed in randomly assigned locations over the screen. These large (40 mm) numbers vary systematically in the degree of contrast, with 1 being at maximum contrast and 8 being at the minimum with a 0.3 log-unit difference from one contrast to the next. The test is designed with a standard sequence of 6 display screens, each presented for 20 seconds, so that there are two presentations each at 24 contrast levels (0.0 to 2.3 log units). The stimuli were displayed on a calibrated computer screen at a viewing distance of 50 centimeters (spatial frequency of 1.83 cpd). The task for the patient was to locate the numbers in sequence. (The Bailey test was added to the protocol in order to provide a computer-generated way of testing CS; however, due to methodological problems, the calibration of the actual contrast levels was not accurate. As a consequence the numerical values do not indicate the actual contrasts, but they do, nevertheless, reliably reflect the order of the contrast levels. The resulting shift in CS results will be addressed in the discussion section in more detail.)

Results

A partial Latin-square was used in the randomization of the testing sequence. The data collected from the MARS and Bailey tests were analyzed using a one-way analysis of variance (ANOVA). Figures 1 and 2 display the mean CS scores for both the MARS and the Bailey tests for all groups. Using the MARS test, a statistically significant main effect of group was detected, $F(2, 61) = 20.83$, $p < .001$, $\eta^2 = .41$, whereby mean CS scores did not differ between the two groups of healthy younger and older observers; however, both groups differed significantly from the glaucoma group, $p < .001$, respectively (Tukey correction). Using the Bailey test, the same main effect was detected, $F(2, 61) = 22.06$, $p < .001$, $\eta^2 = .42$. Again, both younger and older normals could not be distinguished but both groups differed from the glaucoma participants, $p < .001$, respectively (Tukey correction).

A two-way factorial ANOVA (5 spatial frequencies x 3 test groups) was used for both the Vistech and the Faubert test in order to consider a second variable, spatial frequency. Mean values are displayed in Figures 3 and 4. Note that the units for the Vistech analysis were not transformed into log units. The conversion was not possible since some of the glaucoma patients scored 0 on some of the spatial frequencies (they were unable to detect any gratings at the lower frequencies). For the Faubert test, the analysis revealed a statistically significant interaction effect, $F(8, 244) = 4.28$, $p < .001$, $\eta^2 = .12$, whereby all three groups demonstrated a decrease in CS as spatial frequency increased. Given that normal observers showed better CS, this decrease was steeper when compared to the change in the glaucoma group. For the Vistech test, the analysis revealed an equivalent interaction effect, $F(8, 244) = 4.80$, $p < .001$, $\eta^2 = .14$, with a similar pattern of change in the group scores across spatial frequencies.

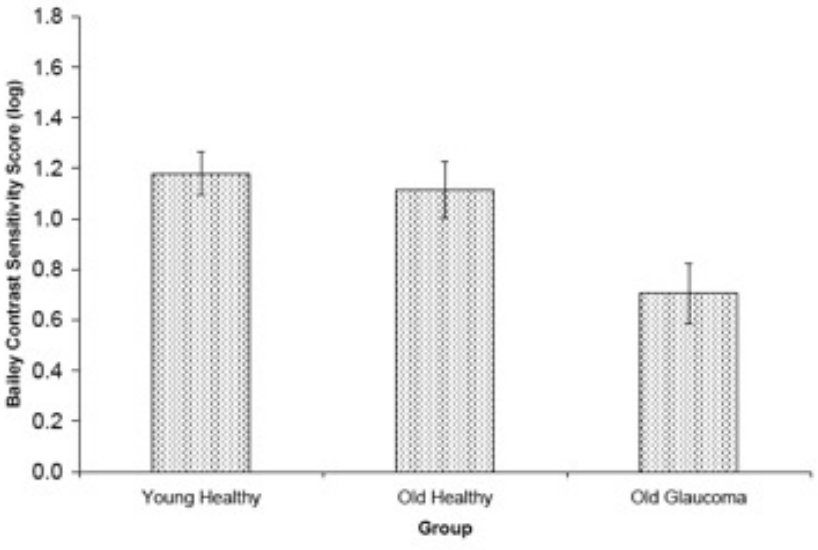

Figure 2: *Mean contrast sensitivity scores on the Bailey test across three subject groups. Error bars represent 95% confidence intervals. Glaucoma patients had statistically significantly lower scores compared to both control groups.*

Discussion

The present results indicated that the MARS and the Bailey tests, measuring CS, did not find any significant difference between the younger and older control groups. The failure to detect an age effect may be explained by the fact that both the MARS and Bailey tests assess the processing of only low spatial frequencies [8], which are known to remain unaffected by age.[9-12] In comparison, the Faubert and Vistech tests, measuring contrast sensitivity over a range of spatial frequencies, demonstrated a statistically significant decrease in CS, notably in the middle spatial-frequency range. Since these differences were considerably larger, they become easier to detect, even without calibrated computer displays, and are more easily assessed, thereby emphasizing the importance of these frequencies in the detection of glaucoma. This decline may result from a combination of age-related optical and neural changes. Optical changes, such as age-related miosis, increased lenticular light scatter and ocular aberrations, may lead to reduced retinal illuminance and reduced contrast in the optical image that decrease CS, particularly at high spatial frequencies.[12] Neural changes with aging are

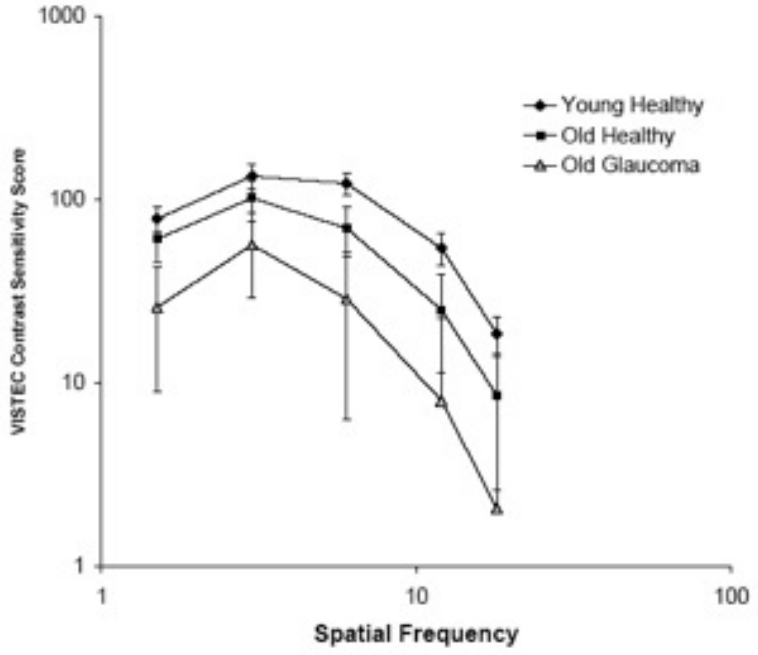

Figure 3: *Mean contrast sensitivity scores across 5 spatial frequencies on the Vistech chart for three subject groups. Error bars represent 95% confidence intervals. Scores differed among all three groups across all spatial frequencies.*

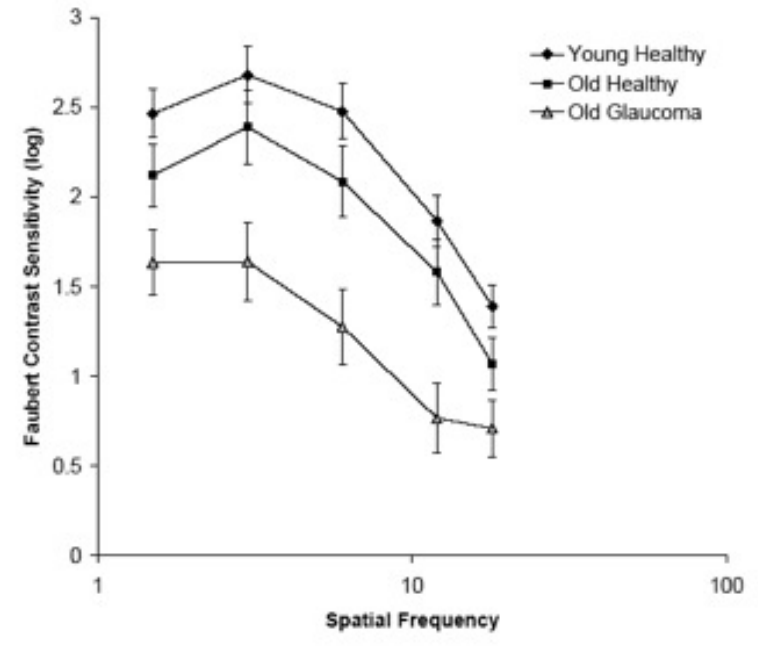

Figure 4: *Mean contrast sensitivity scores across 5 spatial frequencies on the Faubert test for three subject groups. Error bars represent 95% confidence intervals. Scores differed among all three groups across all spatial frequencies.*

attributed to neuronal loss occurring at various levels along the visual pathway between the retina and the cortex. It has been shown that these neural changes are responsible for the reduced CS at middle spatial frequencies.[13]

When assessing the effect of glaucomatous damage on CS, all four tests demonstrated a statistically significant loss of CS in the glaucoma group compared to the healthy control groups, across the range of spatial frequencies. This is expected from the diffuse ganglion cell damage occurring in glaucoma patients. Previous studies have found evidence of damage to both the magnocellular and parvocellular pathways in glaucoma, resulting in loss of visual information.[14] A decrease of CS in the lower spatial frequencies has been attributed to magnocellular ganglion cell damage, while a decline in high spatial frequency CS has been associated with parvocellular ganglionic cell damage [14].

When comparing the efficiency of printed chart tests to that of computer-generated CS tests, there was no difference in the ability of detecting glaucomatous change. All four tests were able to distinguish between the CS values for the healthy and the glaucomatous groups. Closer examination of the CS scores on the Bailey test (see Figure 2) as compared to the MARS test (see Figure 1) shows the CS values were systematically lower across all participants on the computer-generated task. This discrepancy suggested a significant difference in the calibration of the contrast levels; however, this problem was detected too late to be addressed during the study period.

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Therefore, the absolute contrast values on the Bailey test should be treated as suspect. Still, we believe that a systematic relationship exists between the nominal and the real CS values on the Bailey test, indicating that the interpretation of the results with regard to separating the glaucoma group from normal observers still holds.

In order to minimize the effect of other common eye disorders such as cataracts, age-related macular degeneration and diabetic retinopathy, only eyes with best corrected visual acuities of 20/40 (6/12) or better were included in this study. While it is possible to have cataracts, for example, and still have such acuities, our assumption was that the influence of cataracts is minimal in these cases.

CS tests provide a comprehensive assessment of visual function across a wide range of contrasts and spatial frequencies that accurately reflect vision in everyday settings. CS testing holds promise as a means to measure functional changes non-invasively in glaucoma patients who maintain adequate visual acuity.

While automated technology seems to be the new trend in the diagnosis of a wide variety of pathologies, at least in the case of contrast sensitivity, the computer-generated tests used in this study failed to deliver the superiority and precision expected. As a result, the use of printed contrast sensitivity charts may, with good reason, remain the method of choice in the evaluation of this aspect of visual functioning.

Acknowledgements

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References

1. Canadian Ophthalmological Society. What is glaucoma? , 2009; v. 2009.
2. Rhee DJ. Glaucoma. New York: McGraw-Hill Medical Pub. Division, 2003; xv, 441.
3. Hawkins AS, Szlyk JP, Ardickas Z, et al. Comparison of contrast sensitivity, visual acuity, and Humphrey visual field testing in patients with glaucoma. J Glaucoma 2003;12(2):134-8.
4. Thomson Software Solutions. Overview. 2009; v. 2009.
5. Watson AB, Pelli DG. QUEST: A Bayesian adaptive psychometric method. Perception and Psychophysics 1983;33(2):113-20.
6. Vistech Consultants Inc. VCTS 6500 operator's manula, 1988.
7. Arditi A. Improving the design of the letter contrast sensitivity test. Invest Ophthalmol Vis Sci 2005;46(6):2225-9.
8. The Mars Perceptrix Corporation. Mars letter contrast sensitivity test: User manual, 2003.
9. Elliott DB. Contrast sensitivity decline with ageing: a neural or optical phenomenon? Ophthalmic Physiol Opt 1987;7(4):415-9.
10. Morrison JD, McGrath C. Assessment of the optical contributions to the age-related deterioration in vision. Q J Exp Physiol 1985;70(2):249-69.
11. Elliott D, Whitaker D, MacVeigh D. Neural contribution to spatiotemporal contrast sensitivity decline in healthy ageing eyes. Vision Res 1990;30(4): 541-7.
12. Pardhan S. Contrast sensitivity loss with aging: sampling efficiency and equivalent noise at different spatial frequencies. J Opt Soc Am A Opt Image Sci Vis 2004;21(2):169-75.
13. Gao H, Hollyfield JG. Aging of the human retina. Differential loss of neurons and retinal pigment epithelial cells. Invest Ophthalmol Vis Sci 1992;33(1):1-17.
14. McKendrick AM, Badcock DR, Morgan WH. Psychophysical measurement of neural adaptation abnormalities in magnocellular and parvocellular pathways in glaucoma. Invest Ophthalmol Vis Sci 2004;45(6):1846-53.

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Where in the world is Olongapo?

BY PASQ MARCANTONIO, OD

Dr. Pasq Marcantonio, performimg trial lens vision testing the old fashioned way.

That was the question I asked myself when I received an e-mail from my provincial optometric association asking for ODs interested in participating in an optometric mission to the Philippines.

I've been in practice 33 years and optometry has been very good to my family and me.

Lately, I felt a strong urge to give back something for all the good that I was so fortunate to receive. I took the plunge and submitted my name. It was the best and most rewarding thing I have done in a very long time.

Let me tell you about the experience. First, you have to know that it really is a labour of love. You have to understand that you not just lose time from your work but you personally pay for all your own expenses including the flight, the food, and the accommodations. In my case, that was about $2700. Much of that can be considered a charitable/ promotional expense, just ask your accountant.

TWECS takes care of all the logistics including booking flights, accommodations, and local contacts and transportation and dealing with the local officials.

They have organized over 16 safe and well administered projects from East Africa to Vietnam and from Peru to Cambodia, geared to help the poorest of the poor.

The projects are self-contained and complete from the moment the patient walks in to the time they leave with a pair of glasses, it costs them nothing. And we require nothing except an area in which to work.

The planning for each project starts a year in advance but as a volunteer you begin to get updates and information about three months before the trip.

The trips are usually planned for the late Fall of the year. I first applied in late August and I finally left Moncton for Manila on November 5. Since Moncton is the furthest possible distance from the Philippines, it took me two days of flying to get there.

Olongapo City has a population of about 100,000 and is located three hours north of Manila near a decommissioned US naval base called Subic Bay. The city is re-emerging from the economic blow received when Subic bay naval based closed in the 1990s. On the surface, you would be unaware that the city had been hurt by the closure of the naval base. The streets were clean, vibrant and alive and people were everywhere, belying the fact that the average family income is $6 a day.

There seemed to be a concerted campaign in town bent on raising the sprit and pride of the citizens. An abundance of slogans, posters and songs extolling the citizens to 'Aim High Olongapo' and 'Fight for Excellence' were everywhere.

The project in Olongapo lasted nine clinic days divided into two sections. One full day was dedicated to treating the residents of an indigenous tribal group of Aetas who were resettled near Olongapo from the area around Mount Pinatubo following the eruption of that volcano which destroyed their villages.

TWECS is a 100% volunteer registered Canadian charity that began in 1995. TWECS collects and distributes old, used eyeglasses and provides eye exams in developing countries where primary eye care is unavailable.

Generous support from the optical industry and volunteers has allowed the Society to provide restored vision to over 55,000 underprivileged people in the Third World.

Photos by: Damon Rand, TWECS Director

Patients who require glasses lining up at the dispensary station. This is the usual sight at the dispensary at around 4 pm. We usually run out of chairs so the rest are standing up. The examination station is a covered multipurpose basketball court and civic stage. Open sides provide poor light control but you don't get wet when it rains!

We examined, treated and dispensed 500 patients that day. How can you possibly do that you may ask? The secret is organization and delegation. Let me describe a typical clinic day.

You get up at 6 a.m. and have breakfast and are on the bus by 7 a.m. When you arrive at the clinic site, which happens to be the local sports arena in the centre of the city, there are already 550 people inside the arena some of whom have been waiting for you since 4 a.m. Along with another 100 outside who arrived late but are hoping that someone will leave so they can take their place.

As you walk in, they all stand up and clap and give you a standing ovation! When was the last time a patient showed you that much appreciation?

The patients came from every age group. From infants to seniors. The only requirement was that they be self-assesed as poor, and needy of the service. I was amazed at the patience they showed by waiting quietly for many hours while sitting on concrete seats and shuffeling along as we proceeded with the exams.

The volunteer team was composed of many walks of life. There were four young university students, a 64 year old retired office worker, a sales rep for a contact lens company, a 74 year old British ex-pat businessman with wonderful wit and eloquence, an optometric assistant and long time TWECS administrator, one assistant in an ophthalmology office, a retired biologist turned piano tuner, a statistician / amateur photographer, two opticians and four optometrists ranging from under 30 to a spry 57 year old (that would be me!). Some had been on projects before but most of us were first timers.

All had a role to play. Some worked the registration desk, others did visual acuity, one did auto-refraction, one did triage. The optometrists did refractions, ophthalmoscopy, slit lamp and disease treatments when appropriate. The opticians dispensed and did exit visual acuities and finally the statistician kept track of it all. Someone took responsibility to keep everyone supplied with everything from bottled water to clipboards to fans to snacks. We had excellent local support with local nurses who acted as interpreters for us.

Altogether, we gelled into a well-oiled and efficient machine. How efficient you might ask? Well, not to brag, but in nine days the team examined over 5,000 people, and dispensed 4,000 pairs of glasses. (No kidding, just ask the statistician.) All free of charge.

Personally, I cannot remember a more rewarding professional experience except perhaps the passing of TPA legislation in New Brunswick. For two weeks, you meet and live with people who have given up as much as you have to be here and it is so refreshing to discover that there are people in this materialistic world who are prepared to give of themselves with no expectation of reward except a heartfelt thank you.

SHE COULD NOT SEE TO THREAD HER NEEDLE TO SEW THE BAGS TOGETHER AND COULD NO LONGER EARN A LIVING. JUST A SIMPLE PAIR OF READING GLASSES WAS ALL SHE NEEDED TO KEEP ON WORKING.

Interesting cases, here is just a personal sampling:

How about the high school boy who needed –22.00 D glasses but we only had glasses up to –17.00 so we gave him two pairs one –17 and one –5.00 to use one over the other. Don't ask me how he managed to get through school before this.

Or the old lady who came in with shopping bags made of recycled Mylar juice bags.

She could not see to thread her needle to sew the bags together and could no longer earn a living. Just a simple pair of reading glasses was all she needed to keep on working.

Then there was the little 8 year old girl with the turned-in eye that required a + 8.00 Rx and the eye just seemed to straighten right out almost immediately.

The three year-old boy with an acute purulent, bacterial eye infection who just needed a topical antibiotic.

Sometimes you just felt like a miracle worker.

Heartbreaks, yes, there were some:

The impotence felt when facing someone with dense cataracts beyond our help but with the frustrating knowledge that a free, twenty minute operation would give him back his sight… if only he lived in Canada.

The frustration of seeing a patient with obvious glaucomatous discs who could be controlled with medication. Instead he was destined to go blind just because he could not afford the cost of eye drops.

Dr Marina Roma-March performing ophthalmoscopy on young patients.

The heart-rending cases of toddlers with congenital cataracts who were destined to a dark world just because cataract surgery was beyond there reach.

Could we do more? … Of course we could. Did we do some good? … You bet we did. Was it appreciated? Well, consider that on our last day, besides the 550 people already inside the clinic, there were at least another 500 outside standing in line all around the arena just waiting and hoping for a small miracle.

If you want to make a difference, and if you want to give back and show your gratitude for the good fortune you have received, consider joining a TWECS project.

As my team demonstrates, all types of people and backgrounds can participate productively

You do not have to be an optical professional or involved in eye care.

You just need the willingness to be part of a group that wants to do some good.

You don't have to actually go on a mission to help out.

You can be a big help:

Just by having a used eye glasses collection box in your office.

Email **twecs@shaw.ca** and ask for a TWECS collection box.

If you want to go on a mission, just call (604) 874-2733, ask for Dr. Marina Roma-March and ask her for all the particulars.

I hope to see you on my next TWECS project,

Sincerely,

Pasq Marcantonio, O.D.

TWECS LATEST PROJECT

Zanzibar Tanzania Sustainable Eye Clinic

Zanzibar, has a million people with only two optometrists and one eye clinic. In February of this year, TWECS met with the Ministry of Health in Zanzibar to draft a Memorandum of Understanding and a five year plan which would include raising enough funds to train two more optometrists and to build a permanent clinic site in Kwamtipura. Kwamtipura has six communities with 250,000 people living in houses, essentially squatters made with corrugated metal. The clinic will be on the top floor of a community triage clinic.

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‡ Based on in vitro measurements compared with high-water content (>50%) hydrogel lenses.
§ In vitro measurement compared with ACUVUE® OASYS™, ACUVUE® ADVANCE™, Biofinity®, and PureVision®.

References: 1. CIBA VISION, data on file, 2007. **2**. CIBA VISION, data on file, 2004. **3**. CIBA VISION, data on file, 2007. **4**. CIBA VISION, data on file, 2007.