

Early Arcus — An Important Alert

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Abstract

Soon after being fitted with contact lenses, a 26-year old male who had presented an arcus, developed intolerance to the lenses. A subsequent medical examination which included biochemical tests, confirmed the condition of arcus juvenilis. Comments on the management of such cases are offered.

Abrégé

Peu de temps après avoir reçus ses lentilles contact un jeune mâle de 26 ans qui présentait un arcus, développa une intolérance à ses lentilles. Un examen médical, y inclus des tests bio-chimiques, confirma la présence d'un "arcus juvénile". Les auteurs offrent des commentaires sur le traitement de la condition.

Arcus juvenilis appears as a ring around the corneal margin of the iris, sometimes seen in young persons, but resembling arcus senilis (a white ring around the margin of the cornea, produced by fatty degeneration of, or deposits in, corneal tissue, especially in the aged) (1).

All too often a patient exhibiting arcus juvenilis is questioned as to the existence of diabetes or disturbances of lipid metabolism in the immediate family, and if the answer is in the negative, the condition is dismissed as an anomaly of no significance to the patient's present or future welfare. Unfortunately, nothing could be further from the truth.

Even worse is the situation in which some testing is actually carried out but the tests are inadequate to reveal the underlying systemic malfunctions for which the arcus is providing an alert and the patient is reassured that all is well when this is not the case. A case history may help illustrate the situation.

Dr. Paige

Mr. R.B., a 26-year-old white male, was fitted with contact lenses in September 1980. During the examination arcus juvenilis and large pupils (7mm) were noted; however, otherwise he appeared a good candidate for contact lenses. He was advised to consult his physician about the arcus and large pupils.

The first fitting of the contact lenses was uneventful and he quickly adapted to all day wearing. A subsequent progress examination revealed what was apparently a sudden increase in myopia, although of low degree in both eyes. The lenses were checked for warpage or base curve changes and it was ascertained that the increase in myopia was a true one not associated with any failure of the contact lenses to hold stability of characteristics. His pupil size at various examinations was noted to vary from 4 to 7mm under the same lighting conditions. He was again advised to see his physician.

On August 5, 1981 Mr. R.B. presented himself with the following complaints: nausea when wearing his contacts or glasses, loss of adaptation to the contacts (maximum wearing time 6-8 hours), the presence of a floater in his right eye for the past month which was annoying him greatly. He didn't look well. He had seen his physician since his last visit to me and nothing of note was found.

On the basis of the above, I decided to refer him to Dr. Rona with a letter describing my findings and an aside that there appeared to be something peculiar going on.

Dr. Rona

I first saw Mr. R.B. on September 18, 1981. At the time, he presented with multiple somatic complaints (fatigue of 9-10 months duration, intermittent nausea, headaches, for-

getfulness, weakness of the muscles, indigestion, and trouble with his contact lenses). He had recently been to see a general practitioner who reassured him that there was nothing wrong.

Physical evaluation was within normal limits except for the presence of bilateral arcus juvenilis.

Blood and urine tests, however, revealed the following abnormalities:

1) *Abnormal 6 hour glucose tolerance test:* (2, 3)

1 + glucose was found in the urine at the 1st hour and the blood glucose dipped to a level of 51 mgs. % at the 3rd hour. Many of the somatic complaints (fatigue, weakness, etc.) were reproduced on this test. The diagnosis was moderately severe reactive hypoglycemia.

2) *Elevated CHD (Coronary Heart Disease) Risk ratio:* (2, 3)

This is calculated by dividing the value of the total serum cholesterol by the HDL ÷ cholesterol value. In this case it was $221 - 39 = 5.67$. The national average CHD risk for a male is 4.9. Any values above 4.9 are considered higher risk, while those below 4.9 are conversely lower risk. Thus, Mr. R.B. had a statistically greater risk of developing a heart attack over the next five years.

3) *Hair mineral analysis imbalances:* (2, 3)

Hair chromium and manganese were significantly low. Studies show these two minerals to be intimately involved in proper carbohydrate and fat metabolism.

Mr. R.B. is not an unusual or exceptional case of arcus juvenilis associated with biochemical derangements. Over the past three years I have observed dozens of such cases. The common denominator for all of them is impaired lipid metabolism usually associated with abnormal

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glucose tolerance (but not always). I have yet to see a case of arcus juvenilis where these facts do not hold true. In Mr. R.B.'s case, it is clear that his risk for both coronary artery disease as well as diabetes mellitus is above average. Incidentally, Mr. R.B.'s father has both mild adult-onset diabetes as well as high blood pressure and a pacemaker at the age of 76.

By using arcus juvenilis as an alert for prevention of coronary artery disease as well as diabetes mellitus we may be doing many of our patients a great service. Arcus should alert the practitioner to arrange for appro-

priate biochemical testing (glucose tolerance test, lipid profile, liver function tests) to rule out the possibility of either existing or impending pathology. Certainly, it is not a sign that should be ignored.

Once the biochemical abnormalities are elucidated by blood, urine and hair mineral analysis, an appropriate diet can be discussed with the patient as well as possible lifestyle modifications.

We encourage other practitioners to at least look into this holistic approach to patient care (eye and otherwise).

We have seen one case where Wilson's disease, hepatolenticular

degeneration, presented first as a faint corneal arcus in a teen-aged boy.

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The most important consideration in ordering AR coated lenses should be whether the patient is particularly annoyed by ghost images. A bright ghost image can be made dim enough to be negligible with *any* type of anti-reflection coating, regardless of whether the image is seen in or out of focus. Clearly patient complaints should have priority over fashion considerations.

In summary, there is little difference between the "new" brand-name lines of antireflection coatings and the coatings for any glass which have always been available from optical laboratories. However, the decision to use a "brand-name" or "no-name" anti-reflection coating is a matter of the prescriber's personal preference.

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