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FUNCTIONAL MYOPIA PRELIMINARY REPORT OF FIVE CASES

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Among the many patients passing through our offices, one must be impressed, if he is at all observant, by the number of adolescents, practically whose complaint is a diminished distant vision or inability to see the blackboard in school.

Are those patients starting on the road of progressive myopia, or is it functional or pseudo?

The optometric findings reveal a small amount of myopia, either simple or compounds, and unless the case is of long standing it is seldom as high as -2.oo diopters.

Up to the present, the thinking practitioner has approached this problem from the angle of a possible tonic or clonic cramp of the ciliary, and has attempted to break down the condition by means of plus lenses or plus prisms, or orthoptics, or combinations thereof.

The reasoning in the above approach has seemed quite clear: the cramp was induced by an overstimulation of the parasympathetic, which in turn caused an overstimulation of the sympathetic as a compensatory act, and in this manner we could explain the large pupil, which is so common in this type, but which is incongruous with an overstimulation of the parasympathetic, when we should find a myosis, not mydriasis.

The use by the writer of the above hypothesis and treatment of this type of case for the past ten years, has proved disappointing, to say the least. The reduction in the myopia being negligible, we felt that we were at least holding the condition stationary, as no increase was noted while under our care; but we have no way of proving that the cases would not have progressed without our treatment; though one of our patients went to college, and while there broke a lens and was fitted by the Optometric Department of the college with a much stronger minus correction.

The advent of Syntonics, with its more modern conception of physiology and bio-typing, has proved a great help in the new approach to solving the puzzle of functional myopia.

The writer, this spring, has had five cases, such as these mentioned, referred to him, and in going over same, was impressed by the similarity of objective symptoms that all of the five exhibited: definite characteristics of endocrine obesity; all were female.

This endocrine obesity was not in all cases very prominent, but was confirmed by questioning the patient.

So here we have a new factor in the puzzle that may be of immense help in the solution of the problem.

Are these patients starting on the road of progressive myopia, or is it of a functional nature?

By what method shall we attempt an analysis?

As all five cases showed endocrine obesity of some type, perhaps we should consider the part played by heredity first.

In speaking of heredity, we do not necessarily mean that a history of myopia will be found, because generally the opposite proves to be the case, but rather the endocrine or glandular picture.

Lorand states that: Degenerative changes of the Pituitary, Pancreas, and Thyroid may be inherited, manifesting themselves in:

Pituitary --- Acromegaly
Pancreas --- Diabetes
Thyroid ---- In parents who have had T-B.

Malaria, syphilis, and other diseases, the offspring is retarded mentally and physically, and their resistance to infectious disease is practically nil.

Berman states that from studies made along the Mendelian line, the factors of abnormal growth and abnormal metabolism manifest themselves in the following manner:

A. That of abnormal growth is dominant in the males, and a recessive in the female.

B. That of abnormal metabolism is dominant in the female and a recessive in the male.

Furthermore, if an endocrine abnormality like goiter, Achondroplasia or Acromegaly, appears as a sign of endocrine instability in one member of a family, other members of the family will show internal secretion abnormalities.

So, here we have at least part of the solution of our puzzle, and a general, if not a specific, explanation of why the vast majority of these myopic cases are female: To wit, abnormal metabolism is dominant in the female and a recessive in the male.

In conversation with physicians and dentists about this type of case, their opinions are that diet deficiency is one of the principal causes, citing the modern method of cooking and forced growth of vegetables reduces their mineral content to very little, if any.

Functional myopia can be induced by an emotional shock by causing a heavy strain on the thyroid. This being true, we also know that puberty, menstruation, and pregnancy also put a heavy strain on the thyroid; so again we have another part to help solve the puzzle of functional myopia.

Functional myopia cn be induced by hypo-function of the pancreas. In his own practice, the writer has had a patient who was hyperopic of +.50, developed diabetes, and showed objectively a -2.00 sph. for distance, and after eight weeks on insulin, the refraction again showed hyperopic.

With these and other facts at hand, can we say, without tongue in check, that the eyeball grows long and then grows short again? If this were true, why do not all cases of glaucoma show myopia? In fact, gentlemen, the older theory of axial myopia becomes untenable, and the later theory of a neurological basis for this phenomenon almost as useless.

So we shall have to look for a cause of functional myopia.

As was noted above, all five cases were female and reached our office within a year from the time when the diminution of vision was noticed. The average age was fourteen years, and corresponds within reasonable limits to the onset of puberty.

By extension to the circulation, it can and does effect the eye y changing the index of refraction.

The index of refraction of the aqueous is assumed to be 1.3366, and the vitreous 1.3394. (Alger)

Now we have no means of knowing and absolutely no right to assume that the index of refraction of the aqueous and vitreous is 1.3366 and 1.3394, respectively, in every case.

It has been said that (Shephard) a variation of one part in 125 of the salt content of the aqueous would cause an appreciable variation in the dioptic power of the eye.

Stockard states that the same person is constitutionally a different chemical make-up at one age of life period from that which he or she may b e during another period.

The secretion and chemical complex in the child after puberty obviously differs from that found in the baby's body.

Taking the above into consideration, does it not seem reasonable to suppose that slight variations in the index of refraction can and do occur, not only in different cases, but at different periods in the same individual as witness the case of pancreatic functional myopia referred to above.

So our puzzle of Functional Myopia pieced together to date may be and quite possibly is one of a change in the index of refraction of the humours of the eye, or in other words, INDUCIAL MYOPIA.

FUNCTIONAL MYOPIA PRELIMINARY REPORT OF FIVE CASES

Following are the data and analysis of the five cases referred to:

CASE HISTORY:

Sex: Female
Age: Average 14 years
Presenting Symptoms: Can't see blackboard.

Biotype: 3 cases asthenic.

Facial signs: All indicated early hyper-pituitary signs, with high, thin straight nose, marked cheek bones, full lips, though not prominent.

Dental Signs: In all three, the hyper-pituitary was emphasized by showing large, square teeth, with prominent upper front central incisors.

Fat Distribution: Fat distribution indicates hypo-pituitary, it being over the hips, thigh, and legs. Two of the three had hypo-adrenal pupil.

Biotype: 2 of the cases pyknic.

Facial Signs: The faces indicated hypo-pituitary characteristics, being round and full, with short nose, but alert expression, full lips, though not prominent.

Dental Signs: Large, square teeth, though not as prominent as in the asthenics.

Fat Distribution: Evenly distributed over the whole body.

Visual Condition: Average acuity – 20/50
Average refraction – (-1.00)
Temporary Rx – (-.50) = (2.00) add bifocals
Add was determined by the effect of + addition on the near abduction

Chromographs: In all five, fields indicated no toxemia, and were average normal.

O.E.P. 21 Point (Characteristics in Common):

Low – 3-13
5-6 Normal for age.
Low – 8
High – 10-11
Low – 13B
High – 14
Low – 16A – 17A
High – 16 B
Low – 17B
19 – Average 11Δ, normal for age.
High – 21

Primary Typing: Δ

Secondary Typing: B^2

Syntonizations: Approximately 100 total for 5 patients.

Filters:

		δ - μ δ - μ δ S	1/1
Asthenic:			
	N/L	ω - δ ω - δ ωS	1/1
		α - α υ - α υS	1/1
		θ - μ θ - μ θS	1/1
Pyknic	N/L	ω - θ ω - θ ωS	1/1
		α - α π - α μS	1/1

The μ series was indicated to relieve the chronicity of function,

The ω series was indicated by the pseudo or functional myopia.

The α series was indicated by the low reserves.

The writer had the privilege of cooperating with the family physician in two of the asthenic type cases, and this physician's diagnosis was that of hypo-pituitarism and his treatment included pluriglandular therapy re-establishing the anti-pituitary, thyroid, and ovarian service by home-stimulation.

In view of the above, it is always advisable, whenever it is possible to get the cooperation suggested as early as circumstances permit to insure the patient of a complete service; and it will enhance your standing in the eyes of both the physician and the patient.

RESULTS ACHIEVED: The writer is of the opinion that it is too early to draw definite conclusions, due to the small number of cases handled; but he believes he is justified in saying that better result were obtained by the addition of syntonics, than by the methods previously mentioned.

SUGGESTIONS: It seems that a very excellent program of research at the college along lines to determine just what chemical changes are necessary to raise or lower the refractive indices of the Humours of the eye; such studies could be carried out with a Saccharimeter and suitable solutions, and fund of information resulting therefrom prove of immense value to, not only our own, but other professions as well.