DIABETIC NEEDLES*

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THERE are many signs in ocular diabetes which may be regarded as presumptive—not least among which may be considered rubeosis iridis; dispersion of pigment from the posterior surface of iris during iridectomy; presence of small globular haemorrhages in the macular region; hard white diabetic exudate seen in the macula; presence of retinitis proliferans; retinitis circinata; sudden appearance of hyperopia; lipaemia retinalis; failure of pupil to dilate to mydriatics and grapevine formation of vessels. For the most part these various characteristics have been elaborated and are well known by ophthalmologists.

The lens has frequently been studied with the slit-lamp and an endeavour has been made to point out some specific features biomicroscopically to render a pathognomonic feature in cases of diabetic cataract. There has been little or no agreement upon this point and most slit-lamp microscopists are convinced that there is no such thing as a diabetic cataract in the usual type of diabetes seen in older people. Of course the rapidly forming cataract seen in young individuals, which may develop in a few weeks, is a specific type of cataract characterized by small snow flake globules located subcapsularly, but this cataract occurs in the diabetes which is seen only infrequently.

About eight years ago through accident or otherwise, a lenticular sign was observed in diabetics which has remained fairly constant and most assuredly should be considered a presumptive if not a positive diagnostic sign in diabetes. The sign is not constant but when present is specific for diabetes. It has come to be known as the Diabetic Needle or Roman Numeral sign and was given the name because of the resemblance of these lenticular opacities to the above named configurations. Characteristically, when the pupil is dilated and when the red reflex is studied with the indirect ophthalmoscope or the retinoscope a spoke formation is seen in the periphery of the lens which is a linear black streak no thicker centrally than it is peripherally. This is its most important feature—the spoke is never thicker at the periphery than at its central termination and even in cases where there is adult spoke formation in the lens, characteristic of early change in senile cataract, still there may be superimposed upon this cataract formation, the characteristic “diabetic needle.”

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Summary

A series of 19 cases of diabetes is presented. These patients all exhibited the so-called diabetic needle sign. Many of the cases showed nuclear and cortical lenticular opacities but even in these patients when the red reflex was carefully studied the diabetic needles could be picked out from the other lenticular opacities. Case 13 is of particular interest since routine blood sugar and urine studies were negative and with performance of a modified sugar tolerance test a suggestive diabetic curve was secured. This physical sign is offered to ophthalmologist as well as internist as another characteristic to add to the many specific diabetic indicators.

CASE 1.—Mrs. M.K., aged 55 years. This patient has been a diabetic for three years. At present she is using 30 units of insulin daily. The patient's vision was 20/30 in each eye and was corrected to 20/30— in each eye. Posterior polar cataracts were present in each eye—more involved on the left side than on the right. The characteristic diabetic needles were present and were more marked on the left than on the right side. One small round haemorrhage was found in the macular region of the right eye. The arteries showed an increased tortuosity and an irregularity in the light reflex.

CASE 2.—Mrs. G.B., aged 50 years. This patient has been a diabetic for six years. She is using 15 units of insulin daily. Vision in the O.D. is 20/40—correctible to 20/30. Vision in the O.S. is 20/30—correctible to 20/25. Study of the lens under dilatation reveals typical diabetic needles, more pronounced in the left eye than in the right eye. There were no other changes in either lens. In the left macula there was one small spherical haemorrhage. The blood vessels showed occasional arterio-venous constriction and an occasional widening of the light streak along the course of some of the arteries. The blood pressure 130/84.

CASE 3.—Mrs. C.Z., aged 55 years. This patient states that she has had diabetes for four years. At present this patient uses 10 units of insulin each evening. Vision in the O.D. 20/40—1 correctible to 20/30. Vision in the O.S. 20/30—2 correctible to 20/30. Study of the lens under dilatation which was accomplished with homatropine and paradrine under difficulty, showed the presence of 4 characteristic diabetic needles in each lens. There were no other changes in the lens. Fundus examination showed the presence of several "cork screw" macular twigs and a definite tortuosity of the veins. There was considerable quantity of "hard" diabetic exudate in each macular region. There were no retinal haemorrhages. A suggestive temporal pallor of the disc was present on each side but visual field studies disclosed no disturbance of the fields.

CASE 4.—Mrs. G.A., aged 67 years. There was no knowledge of the patient having diabetes and the eye examination was one for routine refraction and presbyopic correction. The patient's vision was 20/100 in each eye and was correctible to 20/30 in each eye. Examination of the lens under dilatation revealed the presence of diabetic needles, more pronounced in the right than in the left eye. The fundus examination showed no changes of any moment—certainly nothing which could be associated with diabetes. Urine examination disclosed the presence of sugar—reported as 2 per cent.

CASE 5.—Mrs. L.G., aged 62 years. This patient has had diabetes for 15 years. At present she is using 25 units of protamine zinc insulin daily. One year prior to her initial examination a preliminary iridectomy was performed upon her right eye at the New York Eye and Ear Infirmary. Examination showed an artificial coloboma of the right iris along with nuclear sclerosis of both lenses with typical diabetic needles superimposed upon the nuclear changes. A characteristic diabetic retinitis could be seen with difficulty. Vision was 15/200 in each eye and could not be improved.

CASE 5.

CASE 6.

CASE 7.

CASE 8.

CASE 6.—Mr. M.D., aged 73 years. This patient is known to have had diabetes for 15 years—of mild character and never having required insulin. Vision is 20/70 in right eye and 20/200 in left eye. There is no improvement of vision with glasses. Examination of each lens under dilatation shows the presence of many diabetic needles. In the left macula there are many exudates and haemorrhages which are characteristically seen in diabetes. Similar but less marked changes are present in the right eye ground.

CASE 7.—Mrs. E.Z., aged 63 years. Diabetic of 10 years duration and at present is using 15 units of regular insulin. Vision is O.D. 20/100 correctible to 20/20, O.S. 20/100 correctible to 20/20. Examination of media under dilatation shows a few typical diabetic needles in the periphery of each lens. The eye ground studies show some exudate in each macula. There are several areas of arterio-venous constriction.

CASE 8.—Mr. M.K., aged 55 years. This patient knows that he has had diabetes for two years. He uses 10 units of insulin each morning. Vision in the right eye is 20/70 correctible to 20/30. Vision in the left eye is 20/200 correctible to 20/30. Study of the lenses under dilatation discloses several diabetic needles superimposed on to typical early and characteristic cortical senile opacities located in the lower nasal quadrant of each eye. There are some floating vitreous opacities in the left eye. There are no pathologic changes in the eye grounds.

CASE 9.—Mrs. S.U., aged 65 years. This patient discovered that she had diabetes about 6 months prior to her eye examination. This patient does not use insulin. Vision has become much worse in the past six months. Vision in O.D. 20/50—O.S. 20/200 with no improvement with glasses. Media examined under dilatation shows several peripheral diabetic "needles" and another type of lenticular opacities, viz., "nuclear." Examination of the fundi shows a diabetic exudative retinitis along with several characteristically diabetic haemorrhages.

CASE 10.—Mr. D.R., aged 34 years. For the past three years patient has been under diabetic regime using 40 units of insulin daily. The patient has had gradual loss of vision in right eye for about one year and in the past four months he has noticed a beginning cloud over his left eye. Vision in the right eye has been reduced to light perception and in the left eye is 20/30—. The right eye showed severe and advanced diabetic retinitis with numerous haemorrhages and exudates, especially in the macular region and a very extensive retinitis proliferans. The red reflex could hardly be obtained from the right eye. In the left eye there were 12 diabetic needles of almost symmetrical distribution. The eye ground showed occasional haemorrhages and exudate with a tendency toward retinitis proliferans.

CASE 11.—Mrs. B.W., aged 69. This patient has had diabetes for 16 years and at present uses 6 units of insulin once daily. The patient knows that upon one occasion her blood sugar has been well over 300. The last blood sugar taken 4 months ago was 164. Vision in the right eye is 20/50 and in the left eye is 5/200. There is present a bilateral exudative diabetic retinitis along with retinitis circinata. Only an occasional haemorrhage was seen. Both lenses after dilatation showed several diabetic "needles." Vision with correction was improved to 20/50 O.D. and 20/200 O.S.

CASE 12.—Mr. S.K., aged 65 years. Patient stated that he had diabetes for 21 years. He has been on a careful diet for several years but has never used insulin. Vision in the right eye is 20/40 and in the left eye is 20/50. The left pupil is irregular in shape and shows a marked atrophy of the inner circle of the iris. Under dilatation there are many diabetic needles in each lens. The eye grounds show an advanced exudative and haemorrhagic form of diabetic retinitis with particular involvement in the macular region. Vision is improved to 20/30 O.U. with a myopic correction.

CASE 13.—Mrs. D.G., aged 62 years. This patient had no knowledge of being diabetic. Vision is 20/40 in each eye. Under dilatation the patient was seen to have a few early diabetic needles in the periphery of each lens. The vision was improved to 20/25 in each eye. There were no eye ground changes suggesting diabetes and the patient stated she had had several negative urine examinations. She was referred for blood sugar studies which was reported as 110 mgm. per cent. Thereupon a modified sugar tolerance test was performed which was reported as being negative of early diabetic mellitus.

CASE 9.

CASE 10.

CASE 11.

CASE 12.

CASE 13.

CASE 14.

CASE 15.

CASE 16.

CASE 17.

CASE 18.

CASE 19.

CASE 14.—Mrs. L.M., aged 50 years. This patient has had diabetes for 20 years. The right eye had been removed six years earlier because of a metastatic panophthalmitis secondary to a carbuncle infection of the chin. Vision in the left eye is 20/40. The patient at present is using 35 units of insulin daily. The left eye shows a severe exudative diabetic retinitis. Under dilatation there are seen 12 diabetic needles around the periphery of the left lens.

CASE 15.—Mr. S.O., aged 45 years. This patient has been a diabetic for the past year. At present he is using 12 units of insulin daily. Vision in O.U. is 20/50. Under dilatation several diabetic needles were visible in the periphery of each lens. There was no involvement of the retina.

CASE 16.—Mrs. R.F., aged 60 years. This patient has been known to have diabetes for 22 years. Present insulin usage is 20 units each morning. Vision is 3/200 in each eye. There is a severe diabetic retinitis in each eye, the primary source of involvement being the macula. In the periphery of each lens are several diabetic needles which are superimposed upon the incipient cortical lenticular opacities.

CASE 17.—Mrs. F.B., aged 69 years. This patient has been diabetic for three years. At present she is using ten units of insulin each morning. Six months ago she had a stroke involving the right side of her face. Vision is 20/40 in the right eye and 20/50 in the left eye. Several "needles" are seen in the periphery of each lens. There is no retinal pathology. Only a slight visual improvement occurs with glasses.

CASE 18.—Mrs. K.F., aged 61 years. This patient is known to have diabetes for the last three years. At present she is using 10 units of insulin daily. Vision is 3/200 in the right eye and 2/200 in the left eye. Examination shows a severe haemorrhage and exudative diabetic retinitis, especially marked in the right macular region. There are posterior cortical cataracts more pronounced in the left than in the right eye. In the periphery of each lens several diabetic needles can be seen. There was little improvement with refraction.

CASE 19.—Mrs. S.K., aged 65 years. This patient has had diabetes for the past six months. No insulin has been given. Vision is 20/40 O.D. and 3/200 O.S. There are many haemorrhages throughout each fundus and extreme vascular pathology. Blood sugar at time of examination was 200 mgm. per cent. In the nasal periphery of each lens were a few characteristic diabetic needles.

ANNOTATIONS

Nursing

The shortage of nurses in this country to-day is hampering the work of hospitals. On this account wards have been closed and waiting lists of patients for admission are increasing. Special departments in general hospitals are embarrassed by having to be content with reduced staff, often untrained, whilst more experienced nurses are allocated to the medical and surgical wards. The frequent changing of staff reduces efficiency and causes much wastage of time.

We think that a solution to this problem so far as ophthalmology is concerned would be to recruit nurses from such war time auxiliary services as the V.A.D. In this organization there are a number of intelligent young women who in 5 years of war acquired a fair measure of practical knowledge. Their work in the ophthalmic departments of the Army was admirable. The majority were quick to learn and became good with their hands.

It would meet the present needs if some way could be found of absorbing them into the nursing staffs of eye out-patient departments. Given a short course of intensive training many could pass the S.R.N. examination without the necessity of enduring the drudgery of three years of institutional life and the repetition of much that they have been doing for the past five years. If this