RETINAL PHLEBITIS AND SINUS DISEASE*

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PHLEBITIS or periphlebitis of the retina manifests itself in various forms. Perhaps the commonest expression of the condition is represented by a line of events ending in gross recurrent vitreous haemorrhages (Eales's disease); but there are other forms varying from an inflammation of a smaller retinal tributary to an inflammation of the central retinal vein, in which case the clinical picture is that of central venous occlusion.

The aetiology of the process is obscure. Tuberculosis has been considered to be the cause (Axenfeld and Stock, 1911; Gilbert 1913), but the general opinion now held is that the phlebitis is not an expression of a single disease but a clinical phenomenon common to several diseases (Ballantyne and Michaelson, 1937).

In the literature few if any cases are attributed to infection of the paranasal sinuses, and therefore the following report of three cases in which this appears to have occurred may direct attention to a somewhat neglected possibility.

Case Reports

Case 1, a girl aged 13 years, was admitted to hospital on December 24, 1952, because of central venous thrombosis of the right eye, in which the visual acuity had dropped to 6/18.

Examination.—There was papilloedema with haemorrhages, dilatation of the retinal veins, and early macular star formation. In addition, the upper nasal and temporal veins were sheathed in exudate. A general examination failed to reveal any other pathological condition except that x rays of the paranasal sinuses showed ethmoiditis on the right side.

Treatment.—With systemic and local antibiotics and cortisone, the condition slowly subsided and on January 10, 1953, the visual acuity was 6/8 despite early atrophy of the optic disc.

Progress.—On September 9, 1953, the girl was again admitted to hospital with changes in the left fundus very similar to those seen 8 months earlier in the right eye. On this occasion a maxillary and ethmoidal process was detected on the left side.

Treatment.—Antibiotics, cortisone, heparin, and dicumarol were given and the process subsided leaving a secondary optic atrophy.

On December 29, 1961, the trouble recurred in the left eye. A Caldwell-Luc operation was performed and a large polyp of the mucosa was removed.

Diagnosis.—This case appeared to be one of bilateral venous occlusion of the retina.

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Case 2, a 47-year-old man, was admitted to hospital for investigation on December 27, 1956. A month previously some oedema of the right disc and three small haemorrhages at the macula had been noted.

Examination.—The visual acuity on admission was 6/18 in the right eye and 6/6 in the left (Fig. 1).

The results of a general examination were negative, except that x rays revealed a large cyst in the right maxillary sinus.

Treatment.—The cyst was removed by a Caldwell–Luc operation, and was found to contain a large amount of purulent fluid, from which *Staphylococcus aureus* and *Streptococcus haemolyticus* were cultured.

Result.—The visual acuity in the right eye improved to 6/6 3 days after the operation. The following day, however, when the patient was discharged from hospital, he replaced his dental prosthesis, so closing the sinus opening. A few days later he developed a large subhyaloid haemorrhage in the right eye, and the visual acuity fell to 6/25 (Fig. 2). The sinus was again opened and drainage restored.

Progress.—At present, 8 years after the acute attack, there are small scars in the macular region with sheathed and obliterated veins between the disc and macula (Fig. 3).

Diagnosis.—This case appeared to be one of phlebitis of the small vessels lying between the disc and the macula.

Case 3, a 34-year-old woman, on June 2, 1958, showed in the right eye the clinical picture of an incomplete central venous thrombosis of the retina with papilloedema (Fig. 4).

Examination.—There were definite radiological and clinical signs of ethmoiditis on the right side.

Treatment.—With antibiotics and local aerosol the fundus condition improved, but on February 9 and April 1, 1959, the fundus and sinus condition recurred simultaneously and the patient was again admitted to hospital. The ethmoidal sinuses were curetted in April, and purulent material was removed, which showed *Staphylococcus albus* and *Streptococcus anhaemolyticus* on culture.

Result.—The papilloedema subsided rapidly and the visual acuity improved from 6/15 to 6/6. There has since been no recurrence. Fig. 5, taken 4 years later, shows some perivenous sheathing.

Discussion

In these three cases there was clinical evidence that retinal phlebitis was associated aetiologically with ipsilateral infection in the paranasal sinuses. The mode of spread from an infective sinus focus to the ophthalmic area is by means of the veins; the process is described by Duke-Elder (1952) as follows:

“The arteries probably play an unimportant role in the spread of the disease

The veins, however, are important, for the mucosa of the sinuses and the orbit are connected by multiple minute perforating veins.

In addition, large relatively constant venous stems exist, the most important of which are the ethmoid veins draining into the superior ophthalmic vein and sometimes into the inferior ophthalmic, a vein from the frontal sinus, which drains into the superior ophthalmic. There is also a fairly constant vein from the maxillary antrum running into the inferior ophthalmic.”

FIG. 1.—Case 2. Fundus, showing oedema of right disc and three small macular haemorrhages.

FIG. 2.—Case 2, a few days after the Caldwell-Luc operation. The patient's dental prosthesis closed the sinus opening on the right side and a subhyaloid haemorrhage developed.

FIG. 3.—Case 2, 8 years after the event, showing macular scar.

FIG. 4.—Case 3. Fundus, showing incomplete central vein thrombosis.

FIG. 5.—Case 3, 4 years after ethmoidectomy, showing slight residual perivenous sheathing.

It would seem that in these three cases the infection of the paranasal sinus spread by phlebitis of an emissary vein into an orbital vein connected with the central retinal vein.

Summary

Three cases of phlebitis retinae are presented in which there is evidence that the condition was caused by an inflammatory process of one or more of the paranasal sinuses. The mechanism of infection of the retinal veins is discussed.

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