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FIVE UNUSUAL CASES OF PROPTOSIS

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THE causes of the pushing forward of the eyes, and perhaps more especially the pushing forward of one eye, often present an interesting problem which is made the more difficult from the inaccessibility of the orbital cavity. One cannot palpate a lump in the orbit in the way that one can in many other places, and although surgical exploration of the cavity may be proper, it is not possible easily to obtain a satisfactory access without dividing expansions or muscles or nerves, which later causes permanent deformity or disability; and further, the removal of part of the external orbital wall is an operation of some magnitude. X-rays are of great value, and their findings may prove conclusive in the way of evidence of disease of the sinuses, involvement of the bone, the presence of oxycephaly, or enlargement of the optic canal. They may, however, reveal no abnormality where, as is often the case, soft tissues alone are involved. The pulsation of a prominent eye greatly limits the possible causes. The past history, perhaps even a remote one of the removal of the breast or a growth elsewhere, may give the necessary hint that we have to deal with a metastatic deposit in the orbit, or the serious illness of the patient with signs of thrombosis of the cavernous sinus may

make the cause clear or, again, the site and severity of an injury may make it certain that haemorrhage into the orbit has occurred. There is besides a group which is insufficiently recognised because of its rather indeterminate nature. A patient comes for advice because of a prominent eye of a few days' duration, which may be attributed to a gnat bite or some such ordinary cause. The proptosis as a rule is not severe, and in many cases subsides completely in the course of a week, and leaves no residue, the whole reason for the proptosis remaining undiscovered. In some cases the proptosis is sufficiently marked to induce the surgeon to make an incision into the orbital cavity with the expectation of finding pus, but usually with a negative result. I believe such cases are due to the toxins from one of the neighbouring air sinuses infiltrating the orbital tissues, the ethmoids being the most likely, the sinus condition itself perhaps giving no symptoms, or symptoms of so slight a nature that they have been ignored. It is evident that such cases may, however, take on a more serious course, and an orbital abscess result. Case 4 is an example of this.

It will be agreed that cases occur in which none of the above ordinary causes of proptosis is operative, and in this connection four out of the five cases that follow are of interest. It will be seen that in four of them the certain cause remains doubtful for the recovery or at least survival of the patient has necessarily rendered complete elucidation impossible. They have a sufficiently varied probable cause for the proptosis to be of interest, and serve as problems for diagnosis for, as has been remarked, the diagnoses that I have suggested are necessarily lacking in finality.

The suggested causes are:—

1. The lodgment in the internal carotid artery of an embolus from the auricular appendix, or a plaque from an atheromatous patch in the aorta.
2. A misleading red herring drawn across the track of a long-standing arterio-venous aneurysm.
3. The spontaneous leakage from an atheromatous internal carotid artery.
4. A non-infective thrombosis of the cavernous sinus.
5. Necrosis of the internal frontal crest.

Case 1.—A woman, aged 62 years, whilst watching cricket, developed what she described as "a sort of kaleidoscopic effect before the left eye." This recurred later, and then a defect of vision was noticed. Two and a half years previously she had had her left leg amputated for gangrene as a result, it was stated, of a sudden block in the femoral artery.

She had been carefully examined, and no nephritis, diabetes, or vascular disease was discoverable; her Wassermann reaction was negative, and she appeared to be in really good health. The right eye was normal and healthy, the acuity was 6/6, and the field complete.

The sight of the affected eye was 6/12 partly, she had a defect in the visual field, and a partial optic atrophy. The left eye was a little more prominent than the right; its movements were unimpaired. The only other abnormality was a marked pulsation, of the spring manometer type, in the retinal artery of each eye.

In the absence of any discoverable disease, it seems that the sudden blockage of the femoral artery, the sudden loss of sight of the left eye, and the arterial pulsation in the retinal arteries, which was undoubtedly pathological in degree, must be connected, and any explanation must correlate these. I suggested as the likeliest diagnosis that she had aortic incompetence, although no clinical evidence of such was obtained (she refused to be X-rayed), and that with it she had thrombosis in the auricular appendix, from which emboli of some size had become dislodged, and had been caught up in the femoral artery on one occasion, and in the termination perhaps of the internal carotid at the later date.

As an alternative it seemed that she might have atheroma of the aorta, from which a plaque had become dislodged and produced the blockage on each occasion.

The physicians could find no evidence of this, and the patient, as I have said, refused to have her head and aorta X-rayed.

Case 2.—C.P., a man aged 38 years was brought to hospital having fallen and struck his head against some stone steps and become unconscious.

He was admitted with bleeding from a wound above the right eye, a large haematoma and a pulsating exophthalmos; it was suggested that he had an arterio-venous aneurysm which had ruptured.

His history was that sixteen years ago, whilst in the army, he was kicked on the side of the jaw by a horse; immediately afterwards he heard a rushing noise in the head, which had persisted, unchanged in character, ever since, and is still unaltered since the last accident. It has never kept him awake.

The right common carotid artery was tied at this time by the late Mr. Wherry. On admission he was semi-conscious. He had a swelling of the side of the face, and a haematoma in the orbit. The cerebro-spinal fluid was clear. He had right frontal headaches at times.

There was marked pulsating exophthalmos of the right eye, and pulsation in the vessels over the right upper lid; he had

fibrillary twitchings of the right sterno-mastoid. No abnormality was found in his reflexes. The systolic blood pressure was 140, the heart normal, and X-ray findings were negative.

When I saw him on December 30 last the noise in his head was the same as it had ever been since the first accident; it was not completely stopped by pressure on either carotid, but he thought pressure on the left was more efficacious in this respect than on the right (the right, it will be remembered, had been ligatured).

The acuity of the right eye was 6/18, the visual field was a little restricted, and the retinal veins on this side were definitely distended as compared with the left.

I suggest that he had an arterio-venous communication in the right cavernous sinus, which was substantially cured by ligature of the common carotid artery, and that the present accident was a rather alarming and misleading red herring drawn across the normal even progress of his nearly cured aneurysm.

Case 3.—M.C., a woman aged 48 years, suddenly developed, seven weeks ago, violent pain all over the head "like a band of steel round it." It lasted three days. At the same time the left eye became painful and bloodshot. She fell, but did not lose consciousness.

Six weeks ago the pain subsided, but she developed thumping in the ear; the vision was unaffected. Three weeks ago the eye bulged. One week ago the swelling increased so as to close the eye completely.

She suffered from bronchial asthma. Menopause three months ago.

On admission she complained of a dull aching pain above the left eye and throbbing in the left temple; she could hear the heart pumping in her left ear, and this noise keeps her awake at night. She had had no serious illness. Of three children two were alive, and well; one died of pneumonia. Her husband was well.

She was of a plethoric appearance. Her chest showed signs of emphysema, and râles were present all over it. Her urine was free of sugar and albumen. Her heart was hypertrophied, the systolic blood pressure was 210, the diastolic 100. Her Wassermann reaction was negative. *Eyes*:—Right, RV 6/9; all natural.

Left: the eye is pushed forward, the movements are limited, there is an expansile pulsation; no ptosis is present. There is marked chemosis. The retinal veins are engorged. Visual acuity 3/60.

A bruit is present which is heard loudest over the right orbit and is completely arrested by pressure on the left common carotid. X-ray examination by Dr. Dudley Stone revealed no abnormality. She was also seen by Professor Fraser, Mr. Paterson Ross and Dr. Beattie.

Progress.—The noise in the head became a sort of whistle, but was sufficiently disturbing to keep her awake at night. She was seen three months later, when all the signs had abated, but all were still present. She expressed herself as being greatly improved.

This patient was the subject of arteriosclerosis, and it seems likely that spontaneous leakage occurred from an artery into the cavernous sinus, owing to a diseased condition of its coats.

Case 4.—E.D., a man aged 24 years, attended hospital on account of diplopia. Eight weeks previously he awoke with a headache, which passed off. Three days later he found he saw double on looking to the right.

When first seen eighteen days ago, there was a slightly tender lump to the outer side of the right orbit, slight proptosis, and no outward movement of this eye.

One week before attending hospital he developed a severe headache, and vomited a number of times. The vomiting had no relation to taking food, and his appetite was not affected. One day later the left eye became swollen.

Past History.—He had always been healthy. He had been somewhat troubled by headaches for the last few years, especially after games. Two years ago he had a bicycle accident, and injured his teeth, face, and forehead.

Symptoms on Admission.—He complained of headaches over the forehead, nausea, vomiting two or three times daily.

His urine showed no abnormal constituents. His systolic blood pressure was 105 mm., the diastolic being 68 mm. His temperature was 98° and his pulse 80, and examination revealed nothing abnormal. The red blood count was 6,520,000, the white 9,000, and haemoglobin 110 per cent. The coagulation time was 1½ minutes, the blood viscosity was 4·7 (the normal being 3·6 to 5·4). His spleen was palpable.

The proptosis of the right eye had a good deal subsided, the left now being the more prominent. The chemosed conjunctiva of the left eye protruded from between the lids, all the movements of both eyes were restricted, and diplopia was troublesome.

Ophthalmoscopic Examination.—The discs were normal. The right retinal veins were perhaps a little engorged, whilst those of the left side were definitely so, but no other abnormality was found. Rhinological examination revealed no disease.

His chief symptom, apart from seeing double, was a severe headache. He looked ill, was lethargic, and had lost much weight. On discharge from hospital he had almost regained his normal weight, was feeling well, the headache and vomiting had stopped completely, the chemosis had disappeared, and almost the only residue of his illness was some diplopia.

I can think of no explanation of this man's illness except non-infective thrombosis of the cavernous sinus.

Case 5.—J.L., female aged 21 years, was admitted to St. Bartholomew's Hospital on July 5, 1935, with a tender diffuse swelling of the whole of the left orbital region, with proptosis. Her tale was that fourteen days previously she had had a sty on the left upper eyelid. Five days ago a bee had stung her on the same lid. For three days she had neuralgic pain over the left side of the face, radiating down from the middle of the left eye to the teeth. Two days ago a swelling developed at the inner side of the eye, which was attributed to sunburn. Yesterday the swelling had extended over both lids and on to the cheek. There was slight epistaxis. She was disposed to attribute her condition to the sting of the bee. The temperature was 102° , pulse 96, respiration 20, and leucocyte count 20,000.

Past History.—It was elicited, but only at a later date, that for more than a year she had had recurrent severe colds, which had affected the left side of her nose more than the right. On the day following her admission I asked Mr. F. C. W. Capps to see her. He found the left side of the nose filled with creamy pus. X-rays at this time showed opacity of the left frontal sinus, of the ethmoid and left antrum. Her temperature rose to 103.8° , her pulse to 120 and her respiration to 23. Cultures of the left conjunctival sac showed the presence of staphylococcus aureus in scanty quantities. On July 8, her condition clearly was worse. There was slight rigidity of the neck. I made an incision into the left orbit under gas and oxygen anaesthesia, but did not find pus. A rubber glove drain was sewn in. Mr. Capps was reluctant to do a bone operation in the acute stage, and I believe this attitude was wise and was justified. On July 9 she vomited twice, and had incontinence of urine and faeces. Her temperature rose to 104.6° , her pulse was 110. Next day she was delirious and had two fits with flexion of the left elbow, turning of the head to the left and conjugate deviation of the eyes to the left. She was unconscious for about two minutes in each fit and was incontinent. On July 12 a rather dramatic change for the better occurred. Her temperature fell to 101° , her pulse to 100. She became quite conscious, asked for food, was no longer incontinent, and coincidentally with the improvement pus began to escape from the orbital wound. On July 26 her left antrum was washed out by Mr. Hogg, and later by Mr. Capps. A discharging fistula was present in the left upper lid. On August 9 she was discharged from hospital, and from then onwards her progress to recovery was gradual and not seriously interrupted, though not uneventful.

On January 1, 1936, Mr. Capps opened the left frontal sinus

and found much granulation tissue and multiple sequestra. On May 20, the sinus having failed to heal, he again admitted her to hospital, removed the outer table of the skull and exposed a cavity which was extra-dural in position, and contained a sequestrum about $\frac{1}{2}$ in. to $\frac{1}{4}$ in., which was readily recognisable as being the lower end of the internal frontal crest, with the groove in it leading down to the foramen caecum. The wound slowly healed completely and permanently, and recovery is complete.

A series of X-ray photographs were taken by Drs. G. Simon, J. B. Douglas and J. V. Sparks. The progress of the change in the frontal bone and the opacities of the sinus were clearly demonstrated. On April 20 Dr. Simon reported, "There is a cavity in the frontal bone just above the upper part of the sinus, with a sequestrum in it."

Comments

Case 1.—In this case I feel the suggested diagnosis is especially speculative. Proptosis was slight and so, I suppose, was due to local oedema of vascular origin. The pulsation of the retinal arteries was very marked, and was, I am sure, pathological, and indicative of aortic insufficiency, and I say this in spite of the fact that no other clinical evidence of this lesion was noted. I take it there can be little doubt but that blockage of the femoral artery occurred, and if so it seems probable, apart from any other consideration, that the eye lesion of sudden onset had a similar cause.

Case 2.—In this case a man was brought into hospital with a wound over the right eye, a large haematoma of the face and forehead, and pulsating exophthalmos, and until he was sufficiently conscious to give an account of himself and explain the scar in his neck, it seemed that he had just sustained an injury which had given rise to an arterio-venous communication in the cavernous sinus.

Case 3.—In this case the diagnosis of a spontaneous leakage from a diseased internal carotid artery must, I think, be correct. There was no question of injury, syphilis could be excluded, and she was known to be the subject of advanced vascular disease. If this be the true explanation, it is certainly a rare cause of the condition.

Case 4.—Of the man whom I suggest has had non-infective thrombosis of the cavernous sinus I can see no alternative explanation. I have previously seen a case in a woman who had recently recovered from pneumonia, but I was unable to find any notes of her. I remember that in essentials she was similar to the present case, and that she recovered, but of necessity, as in all the present cases, the diagnosis lacks substantiation.

Case 5.—It will be seen that this is a case on the borderline between the territory of the rhinologist and the ophthalmic surgeon, and is representative of what is an important and not rare group; a class of case where, when the disease progresses to a serious and dangerous degree, the cause is likely to become revealed, but a number of cases occur which belong to this group where the only sign is slight proptosis which persists perhaps for a few days only and subsides, leaving no disability, and the basic cause unrevealed. I believe such cases are due to an infiltration of the orbital tissues by toxins spreading into them from adjacent air sinuses, the nasal symptoms being so slight as to have evoked no particular discomfort.

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BY

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PORTERFIELD's claim to remembrance rests upon his "Treatise on the eye," which was published, in two volumes, in 1759. I have found considerable difficulty in obtaining any facts about him. One would have thought that it should have been possible to get details of the life of one who was President of the Royal College of Physicians of Edinburgh in 1748, but such is not the case. Porterfield's name does not occur in the *Dictionary of National Biography*, nor have I found it in any of the ordinary books of medical biography at my command. My knowledge of his life is almost entirely derived from Innes Smith's *Register of English-speaking Students at Leyden* and from Dr. John D. Comrie's *History of Scottish Medicine*. Porterfield's parentage has so far baffled research. No doubt he sprang in the first instance from the well-known family "of that ilk" which was long settled in Renfrewshire. Innes Smith gives Ayrshire as the place of his birth.* Facts about the Porterfield family are obtained from Crawford's *History of the Shire of Renfrew* (1818), in which the descent from Stephen de Porter, who had a charter for Porterfield from Robert, Earl of Strathern, c. 1362, is traced. I feel sure that William Porterfield satisfied Sir Walter Scott's dictum.

There are a number of Porterfield wills in the Glasgow Commissary Court but, so far, the will of William Porterfield has not been discovered. Dr. Comrie informs me that he is sometimes confused with Walter Porterfield, who joined the College of Surgeons of Edinburgh in 1684. I have wondered whether William

* The Porterfields of Hapland descend from Gabriel, son of Master John of that ilk, and Jean Knox. Paterson's *History of Ayr and Wigton* (1866).