CAN SIMPLE CONCUSSION OF THE BRAIN GIVE RISE TO OPTIC NEURITIS?

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ON January 2, 1919, E. J. was thrown from his horse whilst racing over hard ground, landed on the back of his head, and became unconscious; his memory for the following week was quite blank. On February 25, 1919, he began to have headaches, which gradually increased in severity, and at the end of March he was found to have optic neuritis. On April 1, 1919, a lumbar puncture was performed and 20 c.c. of cerebro-spinal fluid withdrawn; this relieved his headache.

On April 14, 1919, when I saw him, his condition was as follows: R. V., 6/12 and J. 6, with glasses 6/6 and J. 1. L. V., 6/6 and J. 1, with glasses 6/6 and J. 1. R. E., margins of disc slightly blurred; swelling 1.5 D. Small amount of exudate round origin of vessels, and one haemorrhage on inferior nasal artery on disc. L. E., margins of disc slightly blurred; swelling of disc 0.75 D. One small haemorrhage immediately to temporal side of disc. Small inferior branch of superior temporal artery partly hidden by exudate. No other haemorrhage or exudate. B. E., veins full but not engorged; arteries on the small side. Apart from headaches there are no other symptoms.

As it appears that there is nothing beyond simple concussion to have produced the neuritis, it would be interesting to know if there are any other such cases on record.

GUNSHOT INJURIES OF THE CORTICAL VISUAL AREAS

BY

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THE first of my cases is an example of temporary concussion amblyopia.

CASE 1.—Private S., while standing in a trench, was struck on the top of the head by a bullet. The missile produced a gutter-shaped scalp wound, about two inches long, just over the posterior part of the right parietal bone, but the bone itself was not fractured. Immediately "everything seemed black" to him, but he did not lose consciousness. Fifteen minutes later his vision began to

return, when he "seemed to be looking through a sheet of black glass." He was "able to recognize the corporal and then suddenly" he "could see quite well." Ten days later his vision was normal and his visual fields full.

He states that simultaneously with the blow he had ringing in his ears, and that even now any sharp noise in the ward causes a recurrence of the tinnitus. He also states that he temporarily "lost the use of his legs." Now he walks quite well, but the muscles of his left leg occasionally jerk.

CASE II.—Corporal H. In November, 1917, a bullet went right through this man's steel helmet and struck the back of his head. He was rendered almost blind and was "led in" by one of his comrades. The bullet had fractured his skull over a small area,

and after trephining an opening was found in the dura and also some damage to the brain. After three days his vision began to return, and at the end of three weeks he could read, but with difficulty. Condition on admission (? January, 1918). He had a small pulsating hernia cerebri on the back of his head, just to the left of the middle line. If a line is drawn from one auditory meatus round the back of the head to the other, then the lower edge of the opening in the skull is 5 cm. above this line, or 2.5 cm. above theinion, and two-thirds of the opening is to the left of the middle line. The radiograph shows a small opening in the skull, but no other abnormality. His vision was R.E.=6/6; L.E. = 6/6; fundi normal.

The perimeter chart shows loss of the right halves of his fields of vision and also partial loss of the left halves. The locality of the trauma is probably too high up to involve the centre for macular vision. The dorsal surfaces of the visual areas are both overlaid by the superficial wound, but the right to a less extent than the left.

With this the fields agree. The lesion is not so high up on the right side and the periphery of the corresponding fields is not affected. The original trauma and the hernia cerebri would probably injure some depth of brain tissue, even down through the calcarine fissure and this might account for the upper parts of the fields on the more affected side being involved. That part of the fields in the upper halves between 90° and 75° is not affected.

The fields were taken on several occasions and seven months from the date on which he was wounded the condition still persisted. I should add that I did not observe any loss of colour perception in the remaining parts of his fields.

He states that when his vision began to return he saw things blurred, then later he could read, but only by spelling the words first. When admitted here he could read fairly well. He could write to dictation and then read his own writing. Of course when looking at a long word he could only see one half of it.

Elsewhere¹ I have recorded the case of a soldier who had a penetrating wound of the occipital bone, also on the left side. Of this case I wrote: "He has great difficulty in reading. The long words he spells and then pronounces them. He writes freely and quickly to dictation, but is unable, by sight, to write out a sentence from a newspaper. This defect is not due to loss of visual acuity."

These cases presented some evidence of word-blindness. For most of our knowledge on this subject and its association with lesions of the left occipital lobe we are indebted to the late Dr. James Hinshelwood.

CASE III.—Private H. In March, 1918, a bullet struck the back of this man's head on the right side of the middle line. By

X rays the metal was located in the right occipital lobe and removed on the third day of his illness. He states that the injury rendered him unconscious, but only for a few minutes. His vision was dim for

three days, that is, he could see people but could not recognize them; then his vision returned, but he saw everything double. His left eye was turned in, and he says his pupils were described as being unequal. The diplopia lasted for eight weeks. There was no record of his fields having been examined. Condition on admission, May 24, 1918: His vision was R.E.=6/6; L.E.=6/6; fundi normal; pupils equal and active; no strabismus. He has a trephine opening 3.5 cm. above the intermeatal line or 1 cm. above the inion, and 5 cm. to the right of the middle line.

His fields show a small scotoma for white and colours in the left halves of the visual fields and within the 10° circle. The point of central fixation has escaped. When two people approach him he has difficulty in seeing the one on his left. The locality of the trephine opening is lower down than in the previous case, and although there must have been a fairly deep trauma, the effect is

much more limited. Probably the mesial part of the cortex has escaped, as the trephine opening is a considerable distance from the middle line, and the suggestion follows that this part may be concerned with central fixation.

CASE IV.—Private S. On September 5, 1918, a piece of shell struck the left side of this man's head, and the injury was described as a "penetrating wound, temporo-maxillary joint; cleaned up but no f.b. found."

He was admitted to this hospital on September 11, 1918. Just in front of his left auditory meatus he had a small clean wound into which a probe could be passed for one inch. The left side of his face was paralysed, but not completely, and he was deaf in the left ear. He could not hear a watch in contact with his ear, but could hear a tuning fork by bone conduction. He did not suffer from headache, nor had he any head symptoms and he said

he felt quite well. His vision was normal in each eye; the fundi were normal and the pupil reactions were normal.

His head was X-rayed and two pieces of metal were discovered; a small piece in the bone just in front of the ear and another in the left occipital lobe, in the visual area.

Several radiographs were taken in order to lessen the chance of error in localization. These radiographs show a piece of metal about 1.5 cm. $\times$ 4 mm. lying obliquely in the left occipital lobe. It is about 1 cm. from the posterior surface and about 1 cm. from the mesial plane of the brain. It is about 2 cm. from the external occipital protuberance, measuring from the outer surface of the bone.

The fields for white and colours were normal. The metal in its course from the front of the ear has not torn any optic radiations and seems to be lying under the centre for macular vision.

CASE V.—Private R. On August 9, 1918, a piece of metal struck the back of this man's head. He was rendered unconscious and remained so for four hours. The X ray report from France was, "Possible fracture of right parietal."

He was admitted here on August 29, 1918. He had a scar of recent formation in right parieto-occipital area. The lower edge of the scar is 6 cm. above the intermeatal line, or 3.5 cm. above the inion, and the inner edge is 5 cm. to the right of the middle line. The X ray report obtained here states, "No evidence of fracture." When he reads "a mist comes in front of his eyes," but this may be due to the fact that he has 3 D. of hypermetropia. His age is 27, and his vision R.E.=6/18; L.E.=6/18; fundi normal. On taking his visual fields with the perimeter, it was found that there was an area of dim vision, especially in the vertical meridians, but no actual scotoma. Further, he could only recognize colours within the 10° circle.

When the white test object, moving in the horizontal meridians,

entered the area represented shaded on the chart, he said "dull," and when it crossed the 10° circle he said "bright." The test object did not disappear, but became dull. In the vertical meridians it was mostly "dull all the way in" till it crossed the 10° circle, then "bright" suddenly.

He has some loss of peripheral vision, to a greater extent in the vertical than the horizontal meridians.

The condition was probably due to concussion, and the dorsal surfaces would probably suffer more than the ventral.

This would harmonize with the suggestion of Gordon Holmes that the "vertical axes are represented in the dorsal and ventral margins of the visual areas."

REFERENCE

1. *Glasgow Medical Journal*, May, 1919.

ANNOTATIONS

Ophthalmologists and the Royal Colleges

We regret to find the Royal College of Surgeons of England and the Royal College of Physicians of London, ranged with the General Medical Council in believing that it is not desirable to institute a special examination in ophthalmology conducted by ophthalmologists as part of the final examination, and further that the present regulation relating to instruction in diseases of the eye meets the case. At a meeting of the Royal College of Physicians of London, held in July last, the College adopted the following report from the Committee of Management of the Conjoint Examining Board: "That the present Regulation, Section II, XXI, 6, covers the resolution of the General Medical Council, and that this Regulation requires a sufficient period of special instruction in ophthalmology: that the provisions of the Regulations, Section I, paragraphs VIII and IX, enable the teachers in ophthalmology in the medical schools and hospitals to hold class examinations and to institute such conditions for attendance on the course as they consider desirable before certificates of attendance are granted by them." In our view it is most unfortunate that the bodies concerned have refused to adopt the carefully thought out recommendations of the Council of British Ophthalmologists, which it will be remembered advised that:

(1) No student shall be admitted to the final examination, qualifying to practise medicine, unless he has attended an