Sudden blindness with pituitary tumors

Report of three cases

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Three patients in whom pituitary tumor led to sudden blindness are described; in two, there had been no other indication of a pituitary neoplasm. The authors believe that observation of these patients for 24 hours after the onset of blindness has prognostic value and is safe. If visual improvement occurs during this time, the chances of useful recovery of vision are good. Further delay is contraindicated since in spite of visual improvement, these patients may show a general deterioration which may terminate fatally unless operation is performed.

KEY WORDS pituitary tumor · blindness · visual prognosis · hypothalamic compression

The usual picture of pituitary apoplexy is seen in a patient already known to have a pituitary adenoma and consists of sudden onset of headache, amblyopia, diplopia, drowsiness, confusion and/or coma. In the ensuing three cases, however, the clinical picture was dominated by visual loss, and in two of them there was no previous indication of the presence of a pituitary tumor. Furthermore, although all three patients had suffered a hemorrhage into a pituitary tumor, a delay of up to 10 days after the onset of symptoms did not cause permanent blindness.

Case 1
A previously fit 58-year-old woman had a subarachnoid hemorrhage (confirmed by lumbar puncture) and total bilateral blindness. Her mental state was normal. A skull film showed a ballooned pituitary fossa. Complete blood count, urea, and electrolytes were normal. The patient was treated expectantly, and, during the course of the next 5 days, some improvement in the visual function occurred. She was then able to count fingers in the right nasal field and had regained perception of light on the left side. During these 5 days, however, her general condition deteriorated, and she became confused and drowsy, in spite of treatment with hydrocortisone. The electrolytes and fluid balance remained normal.

At operation 5 days after the onset of blindness, an intracapsular removal of a pituitary tumor was carried out. The tumor had been the source of the subarachnoid hemorrhage and itself contained 7 ml of blood clot. Histological examination (Dr. P. H. Buxton) of the specimen showed faint ghost-like, rather eosinophilic tumor cells with early organizing blood clot. Small clusters of viable, normally staining tumor cells remained, suggesting chromophobe-type pituitary adenoma.

One week after operation the patient was walking and showed marked improvement in vision. Eighteen months later, visual fields...
were full and visual acuity had returned to normal. She still had no recollection of the first 10 days of her illness. Endocrine assessment has shown that she does not require any replacement hormone therapy.

Case 2

A 57-year-old man had been well until he complained of sudden severe headache, followed by complete blindness in the right eye and only perception of light in the left. One week later, his vision had improved spontaneously to counting fingers with both eyes, and, although he still had considerable headache, his general condition was good. The fundi were normal but he had a bitemporal hemianopia. The pupils were equal and reacted sluggishly to light; he had a left sixth nerve palsy. Skil1 films suggested a pituitary tumor, and this was supported by angiography and pneumoencephalography.

At operation 10 days after the onset of blindness, an intracapsular removal of a pituitary tumor containing blood clot was carried out. The histological report (Dr. P. H. Buxton) was as follows: "Small fragments of pituitary adenoma are seen. The tumor cell nuclei are hyperchromatic with little cytoplasm. There is also granulomatous tissue compatible with organized blood clot." The conclusion was viable chromophobe adenoma of the pituitary, and granulation tissue compatible with previous (at least 3 to 4 weeks) hemorrhage into the tumor.

Six months later, when the patient had returned to work, corrected visual acuity was 6/18 (Snellen) on the left and 6/5 on the right. The central fields were normal to charting but the peripheral fields were constricted and there was a lower quadrantic peripheral defect on the right. Endocrine assessment showed that he requires replacement hormone therapy, which has been instituted.

Case 3

This 59-year-old man was originally diagnosed as suffering from a pituitary tumor in 1968. He had a right temporal hemianopia, and his visual acuity was 6/12 (Snellen) in both eyes. He refused operation and was therefore treated with deep x-ray therapy. Visual fields and acuity returned to normal. At the end of 1969, he noticed some deterioration in the vision of the left eye and examination confirmed this. He again refused operation.

Two months later, the patient had a sudden onset of headache, vomiting, and blindness, which was complete in the left eye, and nearly so (perception of light only) in the right. His steroid medication was increased. The electrolytes remained normal. The following day, there was slight improvement in the visual signs as he could just perceive light with his left eye and the left pupil was reacting. No objective change in the right eye was noted. Mentally, he was strikingly different, being confused, disoriented, and drowsy.

At operation 2½ days after the onset of blindness, an intracapsular removal of a pituitary tumor, into which a hemorrhage had occurred, was carried out. The capsule itself was so tough that it was distorting the optic nerves, and its anterolateral portion was therefore dissected free and excised. The histological report (Dr. P. H. Buxton) was as follows: "Much of the material shows hemorrhagic tumor cell 'ghosts' but a few small nests of viable chromophobe adenoma remain. There is also a large area of acellular hyaline collagenous tissue with many polymorphs around it." The conclusion was old and recent hemorrhage into a chromophobe adenoma of the pituitary.

Postoperatively, the patient improved slowly over the next week, his confusion and drowsiness cleared, and he returned to his former mental self. Four months later, the visual fields and acuity had returned to the last recorded preoperative level.

Discussion

For a pituitary tumor to just present with sudden blindness is not common, and a frank subarachnoid hemorrhage as the first presenting symptom is rare. It is also surprising that a tumor, which had been irradiated some 15 months before, could still be the site of a spontaneous hemorrhage. Spontaneous improvement in vision often occurs in patients with pituitary apoplexy, and in our small series, improvement was also associated with a good visual recovery.

Pituitary apoplexy is normally considered a surgical emergency, and immediate operation to decompress the optic nerves is usu-
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ally recommended. In these three patients, however, operation was withheld for from 2½ to 10 days after the onset of blindness, and this delay did not interfere with a satisfactory recovery of vision. Indeed, recovery of sight can occur as long as 10 days after blindness due to pituitary tumor. In our first patient, 5 days of nearly complete blindness, with only slight improvement, elapsed without prejudicing the final visual outcome. Clearly, one should draw guarded conclusions from the study of only three patients but it seems as if delay of a few days to see if spontaneous improvement in vision will occur is not dangerous and allows an accurate visual prognosis to be given; it also gives time for hormonal and contrast x-ray studies to be performed so that maximal preoperative information is available to the surgeon.

Visual improvement, however, by no means necessarily carries a good prognosis for the patient as a whole, and the first and third patients showed marked mental and physical deterioration 3 days after the onset of blindness in spite of improvement in vision. In a reported series of 36 unoperated cases of sudden blindness with pituitary tumor, 22 eventually died; it has been suggested that this unfortunate aspect of the syndrome is due to acute distortion of the third ventricle by the tumor. Certainly our second patient, who did not show this deterioration, had minimal pneumoencephalographic evidence of encroachment on this structure.

Deterioration of this type can apparently occur without any appreciable change in fluid or electrolyte balance and in spite of adequate hormone replacement, but has not occurred in these patients earlier than 36 hours after the onset of blindness. Operation should be followed by recovery so that urgent (within 24 hours after onset of blindness) rather than emergency operation seems an acceptable compromise.

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References


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