progestational steroid; it did not recur. Sodium retention may be noted in cardiac patients given these drugs; they do cause this in normal females but only in the first cycles of administration.

Summary

A successful pregnancy in a patient with Eisenmenger's syndrome (ASD with shunt reversal) is

described. Certain special problems during the pregnancy have been discussed.

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SUBDURAL HÆMATOMA

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SINCE the original report on extradural hæmorrhage by Pott (1760) and the review by Jacobson (1885) there have been numerous reports in the literature of this disorder in its various clinical forms (see McKissock, Richardson and Bloom, 1960). The incidence of subdural hæmatoma, following head injury, according to Cecil and Loeb's "Text book of Medicine", is variously estimated at 1 to 10 per cent. It is classified as acute or chronic according to whether the symptoms develop at the time of injury or appear after an interval of weeks or months. In some of the latter cases the previous head injury may have been so slight as to be forgotten. The most delayed case in the literature (to my knowledge) was reported by Grant (1944) who suggested that an anterior cranial fossa hæmatoma originated 6 years prior to surgery.

"The old adage that subdural hæmatoma is never found when it is diagnosed and is always found when it is not diagnosed, should not be true today if a history of head injury is forthcoming" (Northcroft, 1962). But when there is no such history the problem of diagnosis becomes much more difficult. Subdural hæmatoma should always be borne in mind in the differential diagnosis when an intracranial space occupying lesion is suspected.

Case History

A 16-year-old boy was admitted on May 20th, 1962,

with a history of persistent frontal headache for three weeks. There was one episode of vomiting. For the past five months prior to admission he had had intermittent blurred vision. No history of any head injury. No previous illness of any significance.

On examination, he was alert and well orientated, there was a mild neck stiffness though Kernig's sign was negative. Bilateral papilloedema was found (left more than right). There was bilateral first degree nystagmus and a mild left upper motor neurone facial palsy. In the extremities there was a fine tremor on the left with mild adiadochokinesis. Slightly increased reflexes on the left side. Plantars were bilaterally flexor. After much hesitation, lumbar puncture was done which showed increased pressure but otherwise normal CSF. Subtentorial tumour, (possibly mid-line cerebellar), was diagnosed and the boy was transferred to the neurosurgical unit of a London hospital. The boy was taken to the operating theatre on May 25th, 1962, with a view to ventriculography. Biparietal burrholes were placed and much to the surprise of the surgeons, bilateral subdural hygromas were found. Over 100 ml. of fluid were aspirated on the first occasion. Subsequently subdural tapping resulted in markedly decreased amounts of fluid. The patient remained alert although he continued to have mild headaches. The neurological signs remained more or less the same. He was transferred to a convalescent hospital.

After transfer to the latter hospital he started complaining of increasing headache and appeared to be somewhat drowsy. He therefore was re-admitted to the same neurosurgical unit on June 5th, 1962.

The neurological signs were the same as before, and he continued to have a less severe but bilateral papilloedema with bilateral nystagmus. Arteriograms had been preformed which showed only a small extradural collection on the right side. Subdural tap however, had been bilaterally negative.

Operation

A craniotomy was performed on June 29th, 1962. A large left fronto-parietal flap was raised. A nick was made in the dura which revealed old, greenish-brown membrane suggesting a sub-dural haematoma. A nick was then made in the membrane and immediately yellowish fluid under pressure emerged. At the antero-lateral limit of the exposure and just beneath it could be seen the Sylvian point and here a further membrane was seen which appeared to bridge over the cavity lying in the middle fossa. This membrane was ruptured and a large cavity was then seen, occupying the anterior half of the middle fossa. This cavity was also subdural and was a continuation of the subdural cavity in the middle fossa. Membrane on the under surface of the dura in this region was removed and it was seen that the tip of the temporal lobe had been markedly displaced backwards and that the arachnoid overlying the temporal lobe still remained intact. Medially the left optic nerve and internal carotid artery were exposed and these were covered with thick membrane. During this part of the operation it was noted that a fair amount of CSF collected in the subdural cavity and it was felt that the subdural cavity was in communication with the subarachnoid space, although the opening into the subarachnoid space was not seen. It was decided, therefore, to open the subarachnoid space as widely as possible so that any subdural fluid could drain into the subarachnoid space. The membrane overlying the carotid artery and the third nerve which was seen lateral to it were divided and the arachnoid as well. This division of membrane and arachnoid was continued posteriorly over the free edge of the tentorium until the superior cerebellar artery was encountered, and here the arachnoid was divided so as to enter what was thought to be the pontine cistern. All accessible membrane had been removed and the subdural cavity was sewn as extensively as possible into communication with the subarachnoid space.

Progress

The patient made satisfactory progress in the post-operative period and was sent back to us on July 24th, 1962. At that time all the symptoms had disappeared. The neurological signs, however, though much improved, were still quite severe. He still had bilateral gross papilloedema (left more than right), visual acuity being J.3 in each eye. Slight upper motor neurone facial palsy was present on the left side with slight tremors in the left hand.

He was kept under observation. When last seen, on September 18th, 1962, there was only slight blurring of the temporal margin of the left disc but otherwise both were within normal limits. The visual acuity was J.1 in each eye. There was no other positive neurological sign and he was advised to return to work.

Discussion

Apart from the lack of history of any head injury, there are two other interesting points in this patient, the ipsilateral signs and bilateral papilloedema. Though this boy had bilateral haematoma, it was more severe and persistent on the left side. His neurological signs were therefore ipsilateral. This must have been due to increase of pressure in the left half of the supratentorial cavity which caused the crus to impinge on the opposite tentorial edge (sideward shift). This is the so-called Woltman/Kernohan sign. It happened in 20 per cent of cases reported by Northcroft (1962).

There are two holes inside the cranium, the tentorial hiatus and the foramen magnum. Increased pressure in the supratentorial cavity causes first the so-called 'coning' or the lateral 'shift' as had just been described. A bilateral supratentorial lesion can, in addition, cause a downward shift (as much as 2 cm. (Griffiths, 1957)) transmitting the pressure to the posterior fossa. The cerebellar signs which this patient had, e.g. nystagmus, tremor, adiadochokinesis, etc., were evidently due to this effect.

Bilateral papilloedema was present in only 17 per cent of the series described by Northcroft (1962). In his series, 6 out of 9 patients under the age of 20 had papilloedema whereas only 2 out of 38 over the age of 60 had it. He believes that as we age our brain atrophies and there is more room to contain an effusion within the skull without upsetting the pressure. This may be true but, as we know, the cranial sutures are not united firmly and finally under the age of 18 (Brain, 1955) and hence any increase of intracranial pressure should be accommodated at their expense.

I am grateful to Mr. Wylie McKissock and the Neurosurgical Unit of the Atkinson Morley's Hospital for carrying out the different investigations and for the treatment of this patient.

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