Pineal apoplexy

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SUMMARY A case of haematoma in the pineal region is reported in a patient whose initial symptom was subarachnoid haemorrhage. The encapsulated haematoma and surrounding blood clots were removed surgically. Haemorrhage into a pineal cyst may have been the cause of this particular intracranial mass.

Although pineal tumours are reported to be not uncommon in Japan (Katsura et al., 1959; Araki et al., 1969), haemorrhage into the pineal tumour, pituitary apoplexy, has been a rare occurrence. Apuzzo et al. (1976) recently reported a case of pineal apoplexy caused by haemorrhage into a pineal cyst in a patient on anticoagulant therapy. We report a case of haematoma in the pineal region developing without any anticoagulant therapy.

Case report

A 51 year old previously healthy woman experienced the sudden onset of severe headache and a brief period of unconsciousness. On admission to the local community hospital, spinal tap revealed grossly bloody spinal fluid with an opening pressure of 240 mmHg. The headache, nausea, and vomiting continued for three weeks and then gradually subsided.

On admission on 27 June 1978, the patient was alert. Her blood pressure was 140/80 mmHg. There was marked bilateral papilloedema with retinal haemorrhage. Pupillary light reflexes were sluggish bilaterally, without impairment of the accommodation response. There was no Parinaud’s sign. Left carotid angiograms demonstrated signs of internal hydrocephalus, and left retrograde brachial angiography revealed an elevation of the medial posterior choroidal artery suggesting a mass in the pineal region. Iothalamate (Conray) ventriculography confirmed the presence of hydrocephalus, including the third ventricle.

The suprapineal recess was displaced upward and the aqueduct was almost completely occluded. The anterior margin of the mass was clearly delineated in the posterior part of the third ventricle (Fig. 1). Ventricular CSF taken during the ventriculography was xanthochromic with protein 0.38 g/l and 17 cells per mm3. Computerised tomography (CAT) scan demonstrated a high density mass in the pineal region, while contrast enhancement did not alter the density of the mass (Fig. 2 left).

The patient underwent a right occipital craniotomy on 10 July. The pineal region was exposed through the transcatallosal approach with section of the tentorium under the microscope. On sectioning the splenium of the corpus callosum, a bluish

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Fig. 1 Iothalamate (Conray) ventriculogram with air. The lateral and third ventricle are dilated. In the posterior third ventricle, there is an irregular defect with smooth outline of the pineal mass, which pushes the suprapineal recess upward and occludes the aqueduct almost completely.
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Fig. 2 Pre and postoperative CAT scans. Left: preoperative. Lateral ventricles are dilated. Periventricular low density is seen in front of both anterior horns. High density shadow is located in the posterior third ventricle (without enhancement). Middle: 43rd postoperative day. High density shadow has completely disappeared, while ventricular size is unchanged. There is a low density area in the right occipital lobe. Right: 102nd postoperative day. Ventricular size is reduced, but low density in the right occipital lobe remains.

coloured mass was seen, surrounded by the internal cerebral vein and by Rosenthal's vein. Several fine vessels appeared to run on the surface of the tumour. Puncture of the tumour yielded dark red liquid haematoma, and aspiration of about 4 ml of this fluid made the tumour shrink. The mass consisted of a blood clot which was removed piecemeal. The capsule was 2 mm thick in the posterior part and thinner in the anterior portion. There were also blood clots outside the

Fig. 3 Photomicrographs of the capsule of haematoma. Left: organised haematoma is surrounded by gliosis with haemosiderin-laden macrophages. Haematoxylin and eosin (H and E), original magnification X60. Right: psammoma body is seen within vascular granulation tissue. H and E, original magnification X150.
capsule anteriorly, between the capsule and ependyma of the third ventricle. Opening of the third ventricle revealed that the inside of the ependyma was intact. The capsule was totally removed.

Histological study of the capsule of the haemato-
toma demonstrated very vascular granulation
tissue with abundant haemosiderin-laden macro-
phages and hyalinized connective tissue surround-
ing the organised haematoama. Proliferation of
astroglia was seen in some areas. Although there
were a few psammoma bodies, distinct pineal
tissue was not observed (Fig. 3).

Because of persistence of internal hydro-
cephalus, a ventriculoperitoneal shunt was placed
on the tenth postoperative day, but abdominal
pain with high fever began two weeks later.
Suspicion of shunt infection compelled the
removal of the shunt system and symptoms dis-
appeared promptly thereafter. Hydrocephalus re-
lated symptoms no longer appeared after removal
of the shunt, and papilloedema cleared completely.
A CAT scan performed on the forty-third post-
operative day revealed disappearance of the high
density shadow in the pineal region, though the
size of the ventricles was unchanged. There was a
low density area in the right occipital lobe where
it had been retracted during surgery (Fig. 2 middle).
The postoperative course was uneventful except
for the above-mentioned events and upward
gaze palsy which developed postoperatively. The
patient was discharged on the fifty-seventh post-
operative day without any neurological deficit
except for upward gaze palsy and sluggish light
reflexes. Re-examination by CAT scan on 16
October demonstrated reduction of ventricular
size, while the low density area in the right occipital lobe still remained (Fig. 2 right).

Discussion

This patient, whose initial symptom was subarach-
noid haemorrhage, had an encapsulated haema-
toma located in the pineal region, which occluded
the Sylvian aqueduct and caused internal hydro-
cephalus. In spite of ventriculographic demon-
stration of a mass in the posterior third ventricle
resembling pineal tumour, a high density shadow
in the CAT scan led to the suspicion of haemato-
toma. As causes of intracranial haematoma in
this region, either haemorrhage into a pineal
tumour (pineal apoplexy) or a vascular anomaly
located in this region should be considered.

Haemorrhage into brain tumour is common
when the patient's symptoms increase suddenly.

Moreover, cerebral tumours have occasionally
been found in patients with massive haemorrhage
presenting clinically like haemorrhagic strokes.
Richardson and Einhorn (1963) reported seven
such cases in their 108 necropsy cases of primary
intracerebral haemorrhage. Although more than
180 cases of pituitary apoplexy have been re-
ported (Rovit and Fein, 1972) little reference has
been made to pineal apoplexy.

The case of Apuzzo et al. (1976) may be the
only case reported so far. On reviewing the litera-
ture, they were unable to find any other cases of
haemorrhage from a pineal tumour. Histological
examination of their case indicated that the
haemorrhage occurred into the pineal cyst without
evidence of neoplasm. Among pineal tumours, the
non-neoplastic cyst is a rare entity. It is usually
seen in adults as a residue of a pineal diverticulum
or related to a degenerative process in the central
core of the pineal gland (Russell and Rubinstein,
1971).

Subarachnoid haemorrhage associated with
brain tumour is uncommon. Locksley et al. (1966)
found only 28 cases among 5836 patients with
subarachnoid haemorrhage. Subarachnoid haemor-
hage from pineal tumour is particularly
exceptional. Steinbock et al. (1977) recently re-
ported two cases of pineocytoma presenting as
subarachnoid haemorrhage, and they believed that
these were the first examples of pineocytomas
presenting in such fashion. Our present case also
had subarachnoid haemorrhage as an initial
symptom. In view of the operative findings, blood
clots outside the capsule may reasonably explain
a subarachnoid haemorrhage secondary to rupture
of the haematoama capsule.

Haemorrhage from a vascular anomaly or
vascular tumour in the pineal region is also rare.
Miller (1961) reported a case with haematoama in
the posterior third ventricle caused by haemor-
harge from a cavernous haemangioma involving
the cistern of the great cerebral vein and associ-
ated recurrent subarachnoid haemorrhage. Although
such an aetiology must be considered in our
case, we were unable to find either an ab-
normal vascular shadow in the angiograms or any
vascular anomaly on histology. On the basis of
the operative findings and the histology of the
haematoama capsule, we concluded that this is a
case of haemorrhage into a pineal cyst similar to
the case of Apuzzo et al. (1976). The haematoama
capsule was totally removed by microsurgery.
Nevertheless, upward gaze palsy developed post-
operatively, probably because of damage to
pretectal tissue during surgery.
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References


