Combined Intracerebellar and Posterior Fossa Subdural Hematomas

Case Report

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Spontaneous and traumatic hematomas of the cerebellar hemispheres, and of the posterior fossa subdural space have each been described. Concurrent hematomas in these sites are found very infrequently. Two cases of traumatic origin successfully treated surgically have been reported. We would like to add a third.

Case Report

This 48-year-old woman was admitted to one of the general surgical wards in this hospital on Christmas Day, 1967. Two days previously while standing on a stool she had overbalanced and fallen; she was found lying on the floor, having struck her head on the wall during the fall. She was unconscious for about 20 minutes and had total amnesia for the event. She was rather drowsy thereafter and stayed in bed at home. Her speech was slurred and, as she did not improve and appeared to have left-sided incoordination, the general practitioner referred her to hospital.

Examination. On admission, myxedematous stigmata were noted. There was no evidence of local injury to the head. The blood pressure and temperature were normal. The patient was drowsy but responsive to commands. There was slight neck stiffness and poor coordination of all limbs.

A neurosurgical consultant noted nystagmus, a blurred left optic disc, and a right extensor plantar response. Her right eye had been removed in 1963 after an injury, and she had had amenorrhea since the age of 18 years. Skull x-rays taken at this time revealed no definite abnormality. Bilateral carotid angiography was normal. A vertebral angiogram was not performed. Her condition remained unchanged for the next 2 days but definite papilledema developed.

The patient was transferred to the Neurosurgical Centre. Ventricular drainage was carried out in the hope of improving the level of consciousness as a prelude to ventriculography. The ventricular tap yielded clear cerebrospinal fluid under normal pressure. Positive contrast ventriculography, performed by a method described in a previous publication, showed a large left posterior fossa space-occupying lesion. Following this investigation, ventricular drainage was continued, and steroid administration was commenced. Full endocrinological tests could not have been undertaken in the available time, but hypopituitarism was considered a definite possibility.

Operation. On New Year's Day, 1968, 9 days after the fall, a cerebellar craniectomy was performed. A large fluid and solid subdural hematoma under great pressure was uncovered. When it was removed, the cerebellum began to pulsate. The left hemisphere was discolored and, on exploration, a large intracerebellar hematoma was encountered and removed under direct vision. No vascular abnormality could be seen in the walls of the resulting cavity.

Postoperative Course. The patient gradually improved during the next week but the established hypothyroidism delayed the recovery. At this stage full endocrinological investigations showed a primary hypothyroidism with no evidence of pituitary dysfunction. Treatment with thyroxine sodium 0.1 mg thrice daily was commenced, and steroids were discontinued. Oral iron was administered in view of a proven iron deficiency anemia.

When reviewed as an outpatient some 11 months after her illness, the patient had no neurological impairment and was substantially more active than before the dramatic onset of the incident which brought her to our care.
Discussion

The incidence of posterior fossa subdural hematomas compared with those above the tentorium varies in the literature. Munro found one posterior fossa and 61 supratentorial subdural hematomas (1.6% of total); McKissock, et al., two and 387 (0.5%); Ciembroniewicz, three and 532 (0.6%), and he quoted Clarla's two and 163 (1.2%). Wright, adding five more cases, averaged 1.4% in his series. In the Liverpool Regional Neurosurgical Centre there have been three posterior fossa and 322 supratentorial subdural hematomas (0.9%) over a period of the last 20 years.

Most of these hematomas have been attributed to traumatic tearing of the venous sinuses or of the bridging veins. Nontraumatic cases have been ascribed to ruptured aneurysms, usually with arachnoidal adhesions from previous hemorrhages. Spontaneous intracerebellar hematomas are usually due to hypertension or a vascular malformation.

The origin of a posterior fossa subdural hematoma from an intracerebellar one is rarely recorded, although Schreiber, in describing neonatal posterior fossa hemorrhages, wrote: "A primary intracerebellar haematoma, once formed, will frequently rupture into the posterior fossa subdural space. ..." Wright, et al., mentioned that most posterior fossa subdural hematomas are usually due to trauma with an occasional case following an intracerebellar hemorrhage. Two of the 21 autopsy cases of spontaneous intracerebellar hematomas described by Rey-Bellet had blood in the subdural space, and five of the 31 cases of Hyland and Levy also had blood in "the subarachnoid or subdural spaces," although further details were not given.

A survey of the literature has produced seven fully described cases of the combined lesions. These plus our own case are summarized in Table 1.

Childe, et al., described a 47-year-old man who had sustained a head injury which rendered him unconscious for 4 hours, but he recovered fully. Three days later he developed headaches, vertigo, nausea, vomiting, and ataxia. There was generalized hyperrelexia which was more marked on the left, and a mild left hand incoordination. Skull radiographs were normal, but ventriculography showed a displacement of the fourth ventricle to the right. At operation a fairly extensive solid and liquid subdural hematoma was removed to reveal a small tear in

TABLE 1

<table>
<thead>
<tr>
<th>Author</th>
<th>Age, Sex</th>
<th>Cause</th>
<th>Clinical Features</th>
<th>Hematoma Location, Size</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childe, et al.</td>
<td>47 yrs M</td>
<td>trauma</td>
<td>left-hand incoordination; Babinski response;</td>
<td>left, 1 cm diam</td>
<td>alive</td>
</tr>
<tr>
<td>Ciembroniewicz</td>
<td>84 yrs M</td>
<td>trauma</td>
<td>right Babinski response</td>
<td>right, small</td>
<td>alive</td>
</tr>
<tr>
<td>Clarke and Walton</td>
<td>12 yrs F</td>
<td>ruptured aneurysm; l. post. inf. cerebell. art.</td>
<td>died at once</td>
<td>left, 2.5 cm diam*</td>
<td>died</td>
</tr>
<tr>
<td>Clitherow, et al.</td>
<td>48 yrs F</td>
<td>trauma</td>
<td>drowsy; Babinski response; slurred speech; papilledema; nystagmus; left &gt; right incoordination</td>
<td>left, large</td>
<td>alive</td>
</tr>
<tr>
<td>Fisher, et al.</td>
<td>62 yrs M</td>
<td>trauma</td>
<td>semicoronic; right hemiparesis</td>
<td>right*</td>
<td>alive</td>
</tr>
<tr>
<td>Giroux and Legen</td>
<td>60 yrs M</td>
<td>hypertension</td>
<td>drowsy; dysarthria; nystagmus; right incoordination</td>
<td>right, large</td>
<td>alive</td>
</tr>
<tr>
<td>Schreiber (case 1)</td>
<td>19 days F</td>
<td>birth trauma</td>
<td>full fontanel; hypertension; nystagmus</td>
<td>left</td>
<td>alive</td>
</tr>
<tr>
<td>Schreiber (case 2)</td>
<td>3 wks M</td>
<td>birth trauma</td>
<td>hydrocephalus</td>
<td>left, large</td>
<td>alive</td>
</tr>
</tbody>
</table>

*Postmortem examination.
† Hematoma considered to have originated in the cerebellum and discharged completely into the subdural space before operation.
the left cerebellar hemisphere through which blood oozed from a 1 cm diameter collection within the hemisphere. This was removed, and complete recovery followed.

Schreiber14 reported a second twin, who was delivered with forceps, was initially limp and breathed poorly but improved after 24 hours; she then became hypertonic and had a tense fontanel and nystagmus. Subdural taps were negative, but lumbar puncture gave blood-stained fluid suggesting a traumatic subarachnoid hemorrhage. Further lumbar punctures did not lower the fontanel tension, and so ventriculography was performed, showing a blocked aqueduct with moderate dilatation of the lateral and third ventricles. A tumor in the posterior fossa was suspected, and a craniotomy was performed when she was 19 days old. A large subdural clot was found and evacuated. She made excellent progress and, 17 months after the operation, was as well as her twin. Schreiber considered that the original hematoma was intracerebellar, and that it had discharged itself completely into the subdural space of the posterior fossa.

Our patient sustained a traumatic left intracerebellar hematoma which was responsible for her initial left-sided incoordination. This hematoma had probably discharged itself incompletely into the subdural space by the time that she was admitted to the Neurosurgical Centre, and her signs then were suggestive of a posterior fossa lesion.

Because of concurrent amenorrhea and hypothyroidism, hypopituitarism was initially considered though later disproved. A mild myxoedematous appearance had been noted in 1958 but it was not investigated further then, and definite symptoms had been present for only the last 3 years. The combination of primary hypothyroidism and secondary amenorrhea was, in fact, coincidental. The amenorrhea dated from a change of environment and no other cause could be found on full investigation. This may occur in some susceptible subjects (Jeffcoate").

Summary
We have reported the successful surgical treatment of a patient with combined traumatic intracerebellar and posterior fossa subdural hematomas and have reviewed and summarized related reports of comparable cases.

Acknowledgments
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References