OSSIFICATION OF SUBDURAL HEMATOMA

REPORT OF TWO CASES

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Although the connective-tissue membrane surrounding a subdural hematoma has been described as hyalinized, or calcified partially or in patches, by several authors, only occasional references to totally organized, calcified or ossified hematomas have been found. Munro, among 310 cases, noted 1 such hematoma, Christensen mentioned only 1 case, and Krayenbühl, Lazorthesy Hanke, Dandy, and Voris did not refer to any similar cases in their large materials.

The earlier literature deals mainly with ossified or calcified crust-like hematomas covering the hemisphere, most of which, from pathological and radiological descriptions, were accidental findings. Lewis first mentioned the calcified hematoma, and Goldhahn (1930) reported the first successful removal of one by operation. Schiller, and Dyke and Davidoff described the radiological diagnosis of calcified hematomas. Allen et al., and more recently Mosberg and Smith, reported accidental findings of these lesions at autopsy. There are only sporadic reports of calcified or ossified subdural hematoma operated upon successfully and not one author was found who had published more than 1 case.

CASE REPORTS

Case 1 (103/1956). K.T., a female aged 42 years, had had “meningitis” when she was 3 years old. She was unconscious for 3 weeks and temporary paralysis of the left extremities developed. Since that time development and motion of the left extremities had been poor. For the last 10 years she had suffered very frequently occurring epileptic attacks with unconsciousness, which began with adversity on the left, and usually with psychomotor agitation. The child attended an institution for the education of defective children; she learned to write and read but was unable to learn sums.

Examination. The left part of the body and the left extremities were underdeveloped. The right pupil was larger than the left. There was left central paresis of the 7th and 12th nerves. Tendon reflexes on the left were increased, and Babinski’s sign on the left was positive. There was left-sided spastic hemiparesis, most characteristic in the hand. There were no disturbances of sensation. Behavior was infantile, with adherence to perseveration. Disposition was unsteady. She could deal with only the most simple everyday ideas.

Lumbar spinal fluid contained 2/3 cells and 34 mg. per cent protein, Pandy was negative; electroencephalogram showed right-sided diffuse moderate dysrhythmia. Temporal conductions were upward steadily with tendency to theta-dysrhythmia of medium amplitude; during this course, repeatedly high-amplitude invert spikes appeared. When administering Evipan, invert spikes appeared frequently in the right temporal conduction.

Roentgenograms of the skull showed thickening of the bone in the right temporoparietal region; here there were sharp, sclerotic thin edges (Fig. 1). Sella turcica was normal. Right percutaneous carotid angiography showed normal filling. Lumbar pneumoencephalography revealed abundant subarachnoidal filling, and enlargement of the ventricles; the ventricular system definitely was displaced to the right.

On the basis of the neurological changes caused by the focal epileptic fits and the electroencephalographic findings it was decided to perform a temporal lobectomy.

Operation. Right frontotemporoparietal craniotomy was performed. After turning down the bone flap, a bone-hard plate was found under the dura mater covering the whole opening. On opening the dura mater, the plate, 3–6 mm. thick, was disclosed. It covered the convexity and spread to the base, where it was thicker. The whole plate of bone, which was not adherent to the dura mater, was removed successfully. The surface of the brain was considerably atrophic, the gyri were

Fig. 1. Case 1. Anteroposterior roentgenogram of skull showing sharp-edged sclerotic deformation of bone in right temporoparietal region.
narrow and cicatrized above the Sylvian fossa, and the whole material was hard and congested. Corticography indicated slow, high-amplitude delta-theta waves all over the cortex of the temporal lobe; now and then a nontypical fast wave occurred. We removed the convexity of the temporal lobe and the basal cortex, and also the cicatrized cortical substance above the Sylvian fissure. Only delta-theta activity was present on the control corticography. The wound was closed in layers.

Course. There were rapid signs of recovery from the left hemiplegia, and the patient left the hospital capable of walking.

On examination 3 years later there was further improvement in signs of recovery from the hemiplegia. The proximate group of muscles of the upper extremities and the active movement in the lower extremities corresponded with preoperative conditions; between the wrist and fingers there was slight flexion contracture with paresis more grave than before. No epileptic seizures had occurred since operation. Electroencephalography showed low-amplitude, moderate dysrhythmic activity of the cortex. The variation in waves of temporo-central activity in the right hemisphere pointed to cortical atrophy.

Pathologic Report. The surgical specimen was 6×11 cm. in diameter and 3–6 mm. thick, and like a crust of bone to the naked eye. In shape it corresponded to the surface of the cerebral convexity. The surface of the upper part was smooth; the lower surface was lumpy and uneven to touch. Microscopic sections, made after decalcification, revealed compact, spongy and predominantly hyaline-like connective tissue extraordinarily poor in cells, widely changing into bone-like material, and in several places regular structure of bone was found.

The removed part of cortex was 4×6 cm. in diameter, and 14–16 mm. thick. The gyri were narrow on the surface and slightly discolored to yellow. In shape it corresponded to the surface of the cerebral convexity. The surface of the upper part was smooth; the lower surface was lumpy and uneven to touch. Microscopic sections, made after decalcification, revealed compact, spongy and predominantly hyaline-like connective tissue extraordinarily poor in cells, widely changing into bone-like material, and in several places regular structure of bone was found.

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Case 2 (148/1958). K.I., a male aged 39 years, had sustained an injury of the skull during an explosion in a mine 15 years before admission. He was unconscious for about 15 minutes. After the accident hearing in the left ear was poor. For the last 6 months he had suffered increasing headache, mainly on the left side. Roentgenograms in an out-patient department showed an intracranial calciferous shadow, and he was sent to our institute.

Examination. There was central paresis of the 7th cranial nerve and a peripheral lesion of the 8th nerve. There were no other abnormal neurological findings.

Lumbar spinal fluid contained 68/3 cells and 49 mg. per cent protein. Pandy was positive. Electroencephalogram showed dysrhythmic activity of low amplitude; no indication of an organic lesion could be discovered.

Radiogram and tomogram of the skull showed large irregularly shaped calcareous shadows, measuring 8×3 cm. in the left frontoparietal region and approximately 5×1 cm. on the right. They were intracranial under the lamina interna and presumably were extracerebral. Left percutaneous carotid angiography showed the anterior cerebral artery dislocated moderately to the right (Fig. 2) and the curve of the artery was depressed somewhat. Pneumoencephalography showed dislocation of the whole ventricular system to the right. The left frontal horn was pressed inwards and the left temporal horn was narrower.

Though the radiograms of the skull indicated intracranial calcareous shadows on both sides, the tomogram and primarily the angiogram indicated a space-occupying lesion on the left side only. For this reason we thought it advisable to remove the calcified hematoma on the left.

Operation. A left frontotemporoparietal craniotomy was performed. After opening the dura mater, the whole thin, bone-like plate, which partly covered the convexity, was removed (Fig. 3). The plate of bone was adherent to the dura mater and cortex only by loose connections which could be removed bluntly without causing bleeding. The wound was closed in layers.

Course. After operation hypotension of the cerebrospinal fluid occurred with grave disturbance of consciousness, which after appropriate treatment (infusion, intrathecal filling) gradually settled.

After 1 year the only neurological abnormality was central paresis of the 7th nerve on the right.

Pathologic Report. The thick crust-like curved tissue removed was 8×5 cm. in diameter and 5 mm. thick. It felt like bone and was grayish-yellow in color. The convex surface was smooth; the concave surface and its edges were uneven.

Histologic sections show compact, fibrous connective tissue here and there as basic material, characterized by its scarcity of cells and hyaline-like degeneration. However, the greater part of the tissue is composed of bone with haversian canals (Fig. 4).