Cranial and Intracranial Hydatidosis

With Special Reference to Roentgen-Ray Diagnosis

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For many years emphasis has been laid upon the fact that tapping an intracerebral hydatid cyst or tearing the membrane of a cyst during an operation is extremely detrimental. The spilling of fertile cysts into the surrounding brain substance and into the subarachnoid space enhances the danger of recurrence and meningeal symptoms both of which are serious complications. An exact diagnosis should be aimed at not only in the localization of the lesion but also in the determination of its nature. In this report some of the neuroradiological peculiarities in 28 consecutive cases of cranial and intracranial hydatidosis are discussed and the corresponding literature is reviewed.

Extracerebral Hydatidosis

1. Cranial Form. Forty years ago Dévé injected scolices into the carotid artery in rabbits and succeeded in producing hydatid cysts in several bones. The scapula, the bony structure of which resembles the skull in many respects, was involved in one of these animals. Study of the specimen of bone revealed that the spongiosa was the first part to be involved. Furthermore it was noticed that the pattern of multiplication of cysts within the bony substance was determined mainly by the pressure exerted by the tissue of the host which resists any further extension of the lesion. This kind of development was termed by Dew as "exogenous vesiculation." The resulting cystic material is a pulpy mass consisting of numerous microcysts and their necrotic remnants. With further progression of the lesion the compact tissue is bulged and perforated at many spots, allowing the cysts to invade the soft tissue, where they may grow to the same size and shape as encountered in parenchymatous organs. The pathology of echinococcosis involving the calvarium corresponds to a high degree to that in animals.

Case 1. Five years prior to admission the relatives of a 10-year-old girl noticed a bulging of the right side of her head. This bulging slowly increased in size and induced the parents to consult our clinic.

Examination revealed a very big prominence of the right side of the head (Fig. 1). It felt as hard as normal bone, and pressure exerted upon it caused no pain to the patient. No signs indicating intracranial hypertension and no neurological abnormalities could be detected. Roentgenograms of the chest were normal, Casoni's and Weinberg's reactions were negative, and no eosinophilia was found in the blood. Plain films of the skull revealed an enormous bulging of the external table, though the internal table appeared to be thin and slightly impressed. The space between the two tables included a great number of thin bony laminae, leaving between them numerous cavities (Fig. 2). A diagnosis of bone tumour of unknown nature was made.

Operation. In moderate hypothermia a skin flap was turned. Burr holes were made 1 cm.

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Fig. 1. Case 1. Photograph of a patient with huge cranial hydatidosis.
away from the border of the tumour and connected with Gigli saws. The dura mater was separated carefully from the internal table and the growth was removed in one piece. The patient tolerated the procedure without any complication. Plastic repair of the bony defect has not yet been performed.

The specimen weighed 430 gm. It had almost the shape of a hemisphere in which a paper-thin internal table formed the basis. Upon its removal a great number of cavities became visible which were separated by thin laminae of bone. Most of these cavities were filled with necrotic cysts; others were empty. The external table, which formed the dome of the hemisphere, presented a normal configuration.

Comment. Exclusive localization of hydatid cysts within the skull seems to be a very rare occurrence, if one realizes that in man only 2 per cent of hydatid cysts are localized in the skeleton, and of these only 3.4 per cent are in the skull. In his interesting book, Dévé could collect from the literature until 1948 not more than 23 instances of cranial hydatidosis. Unfortunately he did not mention in how many of these patients the skull was involved solely. Larger series of cerebral hydatidosis, published in recent years, include only exceptional cases with cranial involvement. Goinard et al. reported on a 21-year-old patient in whom plain films of the skull demonstrated, in addition to numerous bony defects of the vault, two linear calcifications within the cranium, which ran almost parallel to each other. The nature of these lines was identified during the operation; one was the internal table pushed into the cranial cavity by numerous cysts and the other was the underlying calcified dura mater.

2. Cranial and Extradural Form.

Case 2.* A 23-year-old officer was admitted with the chief complaint of headaches and dizziness. In the last 12 months he noticed numerous swellings in both occipital regions of his head. Two months before admission the patient started to have headaches and vomited on several occasions. He felt somewhat dizzy and tired, could not concentrate and was unable to attend his classes. Clinically we detected in both parietal and occipital regions at least five fluctuating swellings, the biggest one being 1.5 cm. prominent with a diameter of 4 cm. Bilateral papilledema was noted. The gait was unsteady but not truly ataxic. He was slow in thinking and inattentive in conversations. Plain films of the skull (Fig. 3) revealed in the parietal and occipital regions large bony defects separated from each other by thin laminae of bone. Both internal and external tables were irregularly destroyed and showed at several points the circular outlines of small hydatid cysts. The probable diagnosis of cranial echinococcosis was made.

Operation. Following the skin incision, cysts became visible in the subgaleal space. Through the largest bony defect the intracranial space was explored. It was filled with hundreds of cysts which were removed. The thinned dura mater was seen to be pushed to the bottom of the cavity, which occupied approximately one-third of the whole intracranial space.

Course. Complete recovery followed the operation. One year later, however, the patient consulted us for a fistula from which infected cystic material was still escaping.

Case 3. A 32-year-old farmer consulted us for a swelling on his right forehead.

Examination. There was a soft and moderately painful swelling with a prominence of 2–3 cm. and a diameter of 6 cm. No neurological deficits were found. On plain roentgenograms (Fig. 4) a large and well-limited bony defect in the right frontal area became visible. The edges were sharply defined and consisted of a rather con-

* This case has been published previously by one of the authors. We are grateful to G. Thieme Verlag for permitting us to print this translation.