Congenital Cervical Ependymal Cyst
Report of a Case with Symptoms Precipitated by Injury*

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Congenital intradural extramedullary ependymal cysts of the spinal canal are rare. In recording this additional instance of ependymal cyst of the cervical spinal canal we are focusing attention upon the diagnostic significance of associated bony defects of the cervical vertebrae as the stigmata of an embryonic developmental malformation. We are also emphasizing that the symptoms and signs of cervical spinal cord and root compression were precipitated by injury to the neck.

Case Report

The patient was a white 17-year-old man, who had been well until he suffered an injury of the neck in an automobile accident early in September, 1962. Immediately thereafter he complained of severe pain in the neck associated with radiation of pain down the right arm. There followed numbness of the right arm and leg. Roentgen studies on October 8, 1962, revealed fusion and narrowing of the bodies of the 3rd, 4th and 5th cervical vertebrae with an associated dilatation of the spinal canal in this region (Fig. 1). There was also a failure of fusion (spina bifida) of the spinous processes of the 7th cervical and 1st thoracic vertebrae (Fig. 2). Conservative treatment failed to alleviate the symptoms and the patient was admitted to the Montgomery Hospital, Norristown, Pennsylvania, on December 2, 1962.

Examination. At this time examination disclosed a stiff neck with limitation of movement, and insensitivity to pinprick on the right side of the body. The patient complained of pain in the neck and pain over the area of both trapezius muscles. The remainder of the neurological examination was normal. A myelogram (Figs. 2 and 3) showed a block in the region of the 3rd and 4th cervical vertebrae with widening of the canal in the same region.

Operation. Laminectomy was performed by Dr. Joseph Brady on December 14, 1962. The spinal canal was considerably widened and when the dura was opened the cord was found to be flattened by a gray smooth-surfaced cyst, 2 cm. in maximum diameter. The cyst extended from the level of the inferior border of the 3rd cervical vertebra to the 4th cervical vertebra and lay ventral to the cord. It appeared to be attached to the "ventral aspect" of the cord between C3 and C4. A needle inserted into the cord proper yielded no fluid. Some of the fluid withdrawn from the cyst appeared turbid and contained numerous flecks of grayish material floating in it. The cyst was excised down to the pedicle which was attached ventrally to the cord; in order to avoid damage to the latter a small stump of cyst wall was permitted to remain. The patient recovered uneventfully from the operation and when last examined in December, 1964, he was working full time but still complained of some numbness of the right arm and leg.

Histological Study. The histological appearance of the cyst membrane showed it to consist mainly of fibroconnective tissue which contained a few lymphocytes and macrophages containing hemosiderin scattered

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Fig. 1. Note fusion of the bodies of C3, 4 and 5, with marked enlargement of the canal opposite C3 and 4.
among the fibers, and a lining of a single layer of low cuboidal and columnar epithelium (Figs. 4 and 5). The nuclei of these cells were centrally placed and ovoid in shape. The cytoplasm in some of the cells contained poorly-visualized small vacuoles. There was no distinct basement membrane and cilia could not be seen. The epithelium bore no resemblance to the tall columnar mucous-secreting lining of the intestinal tract but was characteristic of ependymal cells. A smear of the aspirated cyst fluid showed numerous polymorphonuclear leukocytes, a few mononuclear cells and some amorphous debris.

Discussion

At the time of operation the immediate question arose as to the origin of the removed cyst. Was it congenital in origin in view of the associated presence of bony abnormalities of the cervical vertebrae, or could it have been traumatic in view of the close relationship of the symptoms to the injury sustained in the auto accident? Austin\(^1\) stated that “trauma associated with hemorrhage probably has an invariable accompanying fibrosing arachnitis. This is a conspicuous feature at the base of the brain in the presence of evidence of old bleeding. The arachnoid membrane appears particularly responsive to free blood with appearance of increased fibrous trabeculation. The same process undoubtedly operates in production of a chronic arachnitis in traumatized areas of the spinal cord.” We do not feel that trauma was responsible in the formation of the cyst reported here because of the immediate onset of symptoms following injury, the short duration of time between the injury and the surgical exposure of the cyst, and the size and histological appearance of the lesion. We do, however, suggest that the injury precipitated the onset of symptoms in a pre-existing intradural cyst either by causing some hemorrhage into the lesion, as is indicated by the histological appearance of hemosiderin-filled phagocytes in the wall of the cyst, or by disturbing the hydrodynamic forces in the subarachnoid space surrounding the lesion.

The presence of abnormalities of the cervical vertebrae of developmental origin contiguous to the cystic lesion indicate the probable congenital origin of the cyst itself. Hyman \textit{et al.}\(^5\) in 1938,