Spontaneous Spinal Epidural Hematoma

Case Report

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Hematoma of the spinal epidural space arising in the apparent absence of significant trauma or other cause is an uncommon event. Although this rare lesion may occur at any age, there have been only five patients reported whose age was less than 20 years. In one of these, a fall of 3 feet was reported, while in another no history was obtainable; therefore, the classification of these two cases as "spontaneous" is at least debatable. We are reporting an additional case.

Case Report

History. H. C., a 14-year-old white girl, while in the act of voiding, experienced sudden severe pain in the back of her neck, associated with diffuse numbness of both arms. Because of the pain she lay down on the bathroom floor for several minutes, then rose, walked a short distance to her bedroom, and again lay down, complaining to her parents of her neck pain. While resting she noticed the onset of progressive weakness of both arms and legs, occurring over a period of several minutes, and steadily increasing. Medical help was sought, and the patient was referred to the Lawrence and Memorial Hospitals approximately 3 hours after the initial symptoms had begun. She stated that during the past year she had had mild difficulty initiating her urinary stream. On specific questioning she also recalled that during the preceding week she had been aware of some neck discomfort. There were no other premonitory symptoms.

Examination. The patient was a healthy-appearing adolescent, lying quietly, but complaining of neck pain. General examination disclosed no evidence of trauma or other abnormalities, except for abdominal respirations. There was moderate but definite resistance to neck flexion. Neurological evaluation revealed a profound quadriparesis; movement was entirely absent in the legs, hands, and forearms. Feeble external rotation of both arms was the only voluntary motor function demonstrable below the neck.

Diffuse, mild flaccidity was apparent. Sensory testing indicated bilateral anesthesia below the D-2 level, with hypalgesia and hypesthesia below C-5. Vibratory sense was diminished in the right foot; position sense was intact. The deep tendon reflexes were mildly asymmetrical; the triceps jerk was slightly more active on the right than on the left. Superficial abdominal reflexes were absent; the plantar responses were flexor. X-rays of the cervical and thoracic spine were normal. Myelography showed an intra-medullary lesion producing symmetrical widening of the cord shadow from C-3 through C-6 (Fig. 1). Cerebrospinal fluid (CSF) was clear, with no cells; protein was 45 mg%.

Operation. Immediate laminectomy from C-3 through C-6 was carried out. As the laminae were removed, a purplish black mass was disclosed, extending upward from C-5 to C-3 and lying within the epidural space. The mass was found to consist of freshly clotted blood. As the hematoma was evacuated, brisk dural pulsations returned. A few, small, oozing, epidural veins were noted and coagulated. No signs of active arterial bleeding or vascular anomaly were found. Because of the myelographic picture, the dura was opened; the cord appeared normal, and no intradural vascular abnormality was present.

Postoperative Course. The patient made a prompt and essentially complete recovery. She was dismissed 9 days after surgery, her only residual symptom being faint paresthesia in the right foot; there was no associated demonstrable sensory deficit or other abnormality. Hematological investigation during the postoperative period yielded no evidence of a bleeding diathesis.

Follow-Up. Two months later, the patient was re-admitted complaining of diffuse numbness and weakness in her arms and legs. Findings at this time were indicative of a conversion reaction; however, repeat myelography was performed and results were normal (Fig. 2). Symptoms cleared within 2 days, and the patient was dismissed. She has remained neurologically well since.
Discussion

To date, 28 cases of spinal epidural hematoma have been reported in which there was no significant antecedent trauma.

Signs and Symptoms. This disorder is characterized by neck or back pain, often associated with radicular radiation into the chest and extremities, and the development of progressive signs of cord or cauda equina compression. The onset may be abrupt, as in our case, or may evolve over a period of hours or days. Antecedent episodes of fleeting pain and even transient weakness have occasionally occurred over long periods of time. Differential diagnosis includes a wide spectrum of possibilities, ranging from acute intervertebral disc herniation to dissecting aortic aneurysm. As in any suspected acute spinal cord compression, myelography is indispensable and should be performed with an absolute minimum of delay.

Treatment. Immediate laminectomy and
evacuation of the hematoma with, where applicable, removal of any associated vascular anomaly, is recommended. Where the patient's age or physical status appear to constitute a poor surgical risk, any decision to withhold surgery means consigning the patient to at least an irreversible neurological deficit, and possibly death, for the mortality rate in unoperated individuals is a significant one. Prognosis varies with the age and physical condition of the patient, the level of involvement, and the rate of onset. The common feature, however, of all successful cases has been the prompt performance of decompression laminectomy.

Etiology. In a discussion of spinal epidural hematoma without significant antecedent trauma, the concept of "significant" is a subjective one. The episodes immediately preceding the onset of symptoms in these patients have varied, from straining to void, as in the present case, to twisting in bed, to a fall of 10 feet, a rather more "significant" antecedent event. In patients whose symptoms were preceded only by seemingly unimportant episodes, such as voiding, sneezing, and twisting, the presumed pathophysiological mechanism must involve transmission of increased intra-abdominal and intra-thoracic pressure to the epidural venous plexus, thus initiating hemorrhage. Clearly, in view of the countless times which all individuals are subjected to this epidural venous tide, and the relative rarity of epidural hemorrhage in association with it, some other etiological factor(s) must be involved. It is interesting to note that our patient had been vigorously engaged in tumbling and trampoline gymnastics at school for several years, but, due to summer vacation, had not taken part in these activities for several months before her illness. Having weathered the rigors of the trampoline without apparent ill effect, it is a little difficult to believe that the act of voiding could have been the sole etiological factor involved.

In a number of other instances, abnormalities have, in fact, been noted. Ainslie, in reporting 4 cases, noted that arteriosclerosis and hypertension appeared the chief common denominators. But the wide age groups involved, and the consistent absence of any arterial epidural bleeding, make these factors seem unrelated. Abnormal bleeding tendencies have been present in two instances, both rejected by Lowrey in his review as inconsistent with the criteria which he established, namely, a spinal epidural hematoma unassociated with spinal fracture or bleeding diathesis.

Perhaps more relevant are the four vascular anomalies that have been reported: two venous angiomas, a hemangioma, and an epidural varix. In all of these, the epidural bleeding appeared clearly related to the observed blood-vessel abnormality.

It would appear likely, then, that spinal epidural hematoma is a disorder with multiple etiological possibilities and that, in the absence of a bleeding diathesis, a vascular anomaly should be strongly considered. It seems a remote possibility that the rise of epidural venous pressure associated with activities of ordinary living would be sufficient to breach the walls of vessels unaltered by some other pathological process.

Summary

We have reported the successful treatment of a case of "spontaneous" spinal epidural hematoma occurring in a 14-year-old girl and have discussed the diagnosis and treatment of this rare occurrence. We have emphasized the myelographic findings, the need for prompt treatment, and the satisfactions and rewards represented by successful surgical treatment.

References