CASE REPORTS AND TECHNICAL NOTE

SPINAL CORD COMPRESSION BY AN INTRAMEDULLARY ANEURYSM

CASE REPORT AND REVIEW OF THE LITERATURE

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Congenital aneurysms of the vessels of the spinal cord have been reported only rarely. It is of interest, therefore, to present the case of a patient who manifested spinal cord symptoms caused by such a lesion. A review of the reported cases indicates that certain features in common may allow one to entertain a diagnosis.

CASE REPORT

LP., a 41-year-old housewife, was admitted to the hospital on July 27, 1955, having enjoyed good health until February, 1954. After becoming pregnant, she had gradual onset of pain in the left forearm, the pain spreading upward across the chest anteriorly and down the right arm. After 3 days cervical traction was applied with relief of pain. On being mobilized she was slightly unsteady and ataxic. In July, 1954, she was delivered by Caesarean section. The pains in the arms reappeared, continued, and were accompanied by pains in both legs. These were aggravated by motions of the head and neck. Initiation of micturition became more difficult after the section. There was loss of bowel sensation and she had numbness of the buttocks. Two weeks prior to admission, her gait became rapidly weaker.

Examination. The patient was a well developed woman who could not stand unsupported. The cervical and thoracic spines were normal to gross inspection and palpation. Perception of pain was diminished bilaterally below T1, but was preserved in the left lower extremity. Loss of heat sensation, but preservation of perception of cold, was found below T4. Vibration sense was absent in both lower extremities. Postural sensation was absent in the left toes and ankle, but preserved in the right. There was marked weakness of the entire left lower extremity, while motor power was normal in the right. Motor power in both upper extremities was good, except for moderate weakness and atrophy of the intrinsic muscles of the hands, which were more pronounced on the left side. The fingers were thin and spindle-shaped. No fibrillations were evident. The deep tendon reflexes were active and equal. The toes were dorsiflexed on plantar stimulation.

The hemogram was normal and chemical studies of the blood revealed no abnormalities. Cerebrospinal fluid pressure was normal, with no evidence of obstruction. The fluid was clear and colorless, containing 1 lymphocyte per c.mm.; proteins were 50 mg. per 100 cc. The colloidal gold curve was normal; the Wassermann reaction was negative.

Roentgenograms of the chest were normal. Pantopaque myelography showed temporary arrest of the column at the level of the 7th cervical segment. The column flowed around this area, implying an intramedullary lesion.

The symptomatology was attributed to either a syringomyelic cyst or an intramedullary tumor.

Operation. On Aug. 2, 1955, a cervicodorsal laminectomy revealed a blue, discolored area beneath a tense dura mater, at the level of the 7th cervical segment. On incision and retraction of the dura mater, a rounded, blue, cystic intramedullary lesion of the left half of the spinal

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cord was uncovered (Fig. 1). The dorsal columns were spread thinly over this lesion. A needle, introduced into the lesion, recovered a chocolate-colored fluid. No fresh blood was encountered. The pia arachnoid, over the dome of the lesion, was incised longitudinally, and the remnants of the posterior columns were separated gently from it. The dome of the lesion was incised with the escape of more chocolate-colored fluid. With gentle dissection the well circumscribed lesion was separated from the medullary portion of the spinal cord, revealing two arterial vessels at its medial aspect. These were clipped. The main mass of the pea-sized structure was separated easily from the spinal tissue, leaving a capillary bed. During the course of dissection, and after delivery of the lesion, it appeared to have the gross characteristics of a thrombosed aneurysm. A needle was introduced into the cervical enlargement superiorly to eliminate the possibility of an associated syringomyelic cavity. None was encountered.

Postoperative Course. Paresthesias of both arms were troublesome for 5 days and then cleared gradually. By the 8th day the sensory changes had regressed almost completely on the left side, but only to T4 on the right. Motor power in the left extremity improved considerably and, with physiotherapy, the patient resumed walking. Sensibility and control of the bladder were regained. Three weeks after surgery the sensory changes, to pain and heat, were still detectable on the right below T6. There were none on the left. Vibration sense was absent in both toes and ankles. The postural sense was intact on the right and absent on the left. The toes were in plantar flexion. Gait had improved to the point where the patient could walk unsupported.

Pathological Report. The wall of the aneurysm (Fig. 2) was composed of collagenous tissue

![Fig. 1. The spinal cord showed a blue, rounded mass within the left intramedullary portion beneath the posterior columns.](image-url)
and enclosed blood elements varying from a collection of fresh blood cells with leucocytic elements to smaller collections which were in various stages of organization and thrombosis. The walls of vessels with arterial components were identified at the base of the structure.

DISCUSSION

Arterial anomalies of the spinal cord produce their symptoms by external pressure and are usually associated with coarctation of the aorta or other types of congenital heart disease. Such lesions may show localized aneurysmal sacs similar to the congenital type ordinarily seen in the cerebral vessels.

Raymond and Cestan⁴ reported a patient with a history of spastic paraplegia for 20 years caused by a cirroid aneurysm of the anterior and posterior spinal vessels. The aneurysm extended from C2 to C7 and was extramedullary and intramedullary in position. The posterior aspects showed aneurysmal dilatations but the lesion did not appear to be congenital in type. Hebold⁶ found multiple miliary aneurysms in the extramedullary and intramedullary vessels of the spinal cord of a young girl. Wyburn-Mason⁷ discovered 5 instances of localized aneurysm associated with arterial anomalies.

Symptoms in Sargent's⁵ case began with weakness and wasting of the right arm and, after gradually increasing compression over 2 years, ended with a complete transverse lesion at the T1 segment. A local aneurysm of the anterior spinal artery, which compressed and destroyed the cord at C7 segment, was found at autopsy.

The clinical course in Wyburn-Mason's⁷ Case 31 was initiated by spinal sub-
arachnoid hemorrhage, followed by temporary weakness of one leg and gradually increasing spinal compression over a 2-year period. Postmortem examination divulged a localized aneurysm arising from a tortuous and dilated anterior spinal artery, causing compression and destruction of the cord. In his Case 32, progressive weakness of both hands with increasing numbness of the upper part of the chest characterized the clinical course. Autopsy showed compression of the cord by an aneurysm formed from the anterior spinal artery at the level of the T3 segment. In each of the reported cases the lesion was associated with coarctation of the aorta.

Lorenz's patient had weakness of the left arm followed by sudden motor and sensory paralysis. Postmortem examination disclosed a cherry-sized angiomatoma at the 7th cervical segment with hemorrhage into the subarachnoid space and substance of the cord from C1 to C7.

Robertson reported a girl of 16 whose initial symptoms were pains in the back and the right arm. Subsequently there developed paralysis of the right arm and leg, followed by paralysis of the left side. There were respiratory difficulties. Postmortem examination revealed a racemose arterial aneurysm with a localized laminated blood clot which had reduced the lower three cervical segments to a crescentic remnant.

Babonneix and Widiez reported a man of 56 with a clinical picture of combined sclerosis and syphilis. An illustration of the postmortem specimen demonstrated graphically an aneurysm of the lower cervical portion of the anterior spinal artery, to which the symptomatology was ascribed.

In our case there was no clinical evidence of coarctation of the aorta or other detectable congenital cardiac lesion. Symptoms began with severe neuritic pains in the upper extremities accompanied by atrophy of the intrinsic muscles of the hands. Dissociation of sensory changes as well as the atrophy led to a diagnosis of syringomyelia. Resection of a well circumscribed, organized, vascular, intramedullary structure along the course of the arterial channels allowed a diagnosis of aneurysm at the time of surgery. Unfortunately the vessel of origin of the aneurysm could not be established. The residuals, at the time of publication, consist of weakness and ataxia caused by loss of postural and vibration sensation in the left lower extremity.

The diagnosis of congenital aneurysm of the arteries of the spinal cord should be entertained when the syndrome of cord compression is accompanied by clinical evidence of coarctation of the aorta or other cardiac anomalies. In some cases the clinical course is initiated by the signs of subarachnoid hemorrhage with localization in the spinal cord. A point of considerable diagnostic significance is the frequent localization of the lesion to the cervicothoracic junction. Where there are pain and atrophy in the upper limbs, with the gradual development of a Brown-Séquard or compression syndrome, the diagnosis of aneurysm of the anterior spinal artery may be suspected.

No one feature in the spinal fluid is diagnostic of the condition, but the finding of fresh blood and the demonstration of an intramedullary mass by myelography at the cervicothoracic junction strengthen the diagnosis. We have seen no reports of vertebral angiography, aortography or intrasosseous venography having been employed in the attempt to visualize the lesion.

SUMMARY

1. A case is reported of a spinal cord lesion caused by an arterial aneurysm.
2. A brief review is made of the clinical and pathological findings in previously reported cases.
3. The criteria are discussed for diagnosis of aneurysm of the spinal arteries.
REFERENCES