Subarachnoid Hemorrhage due to Cervical Cord Tumor in a Child

Case Report

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This is the report of a 3½-year-old child with the unusual problem of subarachnoid hemorrhage from an astrocytoma of the cervical spinal cord.

Case Report

History. This 3½-year-old white girl had been first seen in the hospital in April, 1961, because of a sudden headache and transient loss of consciousness 2 days earlier. Examination showed slight neck stiffness and a mild left hemiparesis with left extensor plantar response. A lumbar puncture produced heavily blood-stained fluid. Two weeks later on May 2, 1961, she was transferred to the Midland Centre for Neurosurgery, at that time she was conscious and cooperative; Her pulse was 88 per min and blood pressure was 110/70 mm of Hg. Neurological examination showed a left sixth nerve weakness and a right lower motor neuron facial palsy. There was a left hemiparesis with exaggerated tendon reflexes and extensor plantar response. Slight neck stiffness was present.

On June 14, cerebrospinal fluid was clear and contained 26 mg per 100 ml of protein, a sugar count of 66 mg per 100 ml, and 2 white cells per cu mm. Plain x-ray films of the chest and skull were normal. Bilateral carotid angiograms and vertebral angiogram were normal. X-ray films of the cervical spine showed a slightly enlarged spinal canal (Fig. 1 left). No other abnormality was found.

The left hemiparesis gradually disappeared, but about 4 weeks later the patient developed a progressive right hemiparesis with tilting of the head to the left shoulder. This then improved after 1 week. At this stage the possibility of a vascular malformation of the cervical cord was considered, but since the child was now well, no further investigations were carried out. The patient was then seen as an outpatient until March, 1962, and subsequently contact with her was lost.

Since 1962 she had been under orthopedic care and had gradually developed torticollis with tilting of the head to the left shoulder. For this she was given a cervical collar in December, 1962, and during the same period she also developed a scoliosis in the dorsal region (Fig. 2 left) and was fitted with a Milwaukee brace in February, 1963. In March, 1967, she suddenly lost all power in both arms for 7 days, followed by gradual improvement. She was admitted to North Staffordshire Royal Infirmary, Stoke-on-Trent, on February 7, 1968.

Examination. The patient, now 10 years of age, was cooperative and intelligent. She had marked dorsal scoliosis with the convexity to the right side and walked with a limp. The head was tilted to the left shoulder. There was cyanosis of both hands. There was bilateral weakness of trapezius, sternomastoids, and the muscles of the back of the neck. There was hypotonia of all four limbs, the arms being severely affected. The left arm was completely paralyzed; she could just lift the right arm off the bed but could not move the fingers of that hand. Power was diminished in both legs. All the arm reflexes were absent and both knee and ankle jerks were exaggerated, with bilateral extensor plantar responses and ankle clonus. The sensations of fine touch and pinprick were diminished over the C5-6 and T-1 distribution and absent over C-7 distribution on the right side. Joint and position senses were absent on both arms; sensory findings were normal elsewhere.

Lumbar puncture showed a complete manometric block. The cerebrospinal fluid showed marked xanthochromia and 3,000 mg per 100 ml of protein. The x-ray films of the spine showed an extreme degree of dorsal kyphosis and enlargement of the cervical canal (Fig. 1 right). Myelography revealed a
complete block at the T-9 level (Fig. 2 right).

Operation. A laminectomy was carried out in two stages and showed a large vascular tumor extending from the first cervical to the ninth thoracic level and extensively involving the spinal cord. A biopsy was taken, and the wound was closed. Histological examination showed the tumor to be an astrocytoma.

Postoperative Course. Recovery was uneventful, with slight improvement in the neurological deficits.

Discussion
Small hemorrhages into spinal tumors are not uncommon and are known to cause transient neurological defects. Massive hemorrhages, although unusual, may also occur and cause a rapid increase in the neurological disability. However, hemorrhage from the tumor may primarily occur into the subarachnoid space with a paucity of signs and symptoms to indicate its origin. Further difficulty in diagnosis arises from the tendency to complete remission of symptoms and from the minimal clinical abnormality that may exist in the intervals between hemorrhages. The rarity of the condition adds to the diagnostic problem. About 17 cases had been reported up to October, 1966, and a further four cases were added by Nassar and Correll. The average age of these cases was 26 years, and in general they tended to occur in the second and third decades. The oldest patient reported was 74 years old, and the youngest was 8 years old. There has been no previous report of the condition in a child as young as the one we have reported.

All these cases had low back pain either as an initial symptom or in association with the headache. Some patients had these symptoms for several years before the hemorrhage, while in others exercise or trauma seemed to have precipitated the bleeding. Our case was unusual in that there was no symptom or sign suggestive of the spinal origin of the bleeding; this could have been due
Subarachnoid Hemorrhage from Cervical Cord Tumor

751

Terminale have a thin vascular stroma and therefore tend to bleed, especially as there is the greatest change in the length of the spinal cord at the lumbosacral region during spinal movement. Actually, most cases reported were ependymomas at this level.

Summary

We have reported the case of a 10-year-old girl who had a subarachnoid hemorrhage at the age of 3½ years with torticollis as the only symptom for the next 6 years. She then developed widespread evidence of spinal cord damage, which was found to be due to a large inoperable cervical astrocytoma.

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References


Fig. 2. Left: Plain x-ray film of cervical spine showing enlarged cervical canal with scoliosis in the dorsal region (1963). Right: Myelogram of the cervical canal showing complete block at the T-9 level (1968).

to the age of the child who could not give a full history. In fact, a changing neurological picture and the development of torticollis were the only neurological signs which finally suggested the spinal origin of bleeding in the present case.

Various factors have been considered as possible causes of the bleeding in other reported cases. Russell and Rubinstein mention that the ependymomas of the filum