Case Report

Vertebral Hemangioma with Compression of the Spinal Cord

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Case reports of vertebral hemangiomas occurring in association with compression of the spinal cord have appeared infrequently in the medical literature. In his 1953 review Coechi cited no more than 140 cases of hemangioma of bone, and in 1955 Bell mentioned only 64 cases associated with compression of the spinal cord. Robbins and Fountain in 1958 collected only 10 examples of such compression in the cervical area.

The roentgenographic appearance of vertebral hemangioma is characteristic. It was described first in 1926 by Perman whose report was based on the observation of his own case in which laminectomy had been performed successfully. In 1929 Bailey and Bucy emphasized that, although cavernous hemangioma of the vertebra presented a characteristic roentgenological picture, rarely at that time was the diagnosis made either before operation or before necropsy. Roentgen therapy, introduced in 1930, was initiated largely as the result of the dismal early surgical experiences.

While surgical mortality now is negligible for such compression, the procedure remains difficult and preparations for blood replacement are important. Roentgen therapy then remains the procedure of choice unless otherwise contraindicated by failure of response or by too rapid progression of the symptoms of compression.

Because of the uncommon occurrence of symptoms of compression, as well as the importance of the early recognition and treatment of vertebral hemangiomas, it seemed justifiable to describe the case of a 70-year-old woman who recovered as the result of radiation therapy alone, and remained well until her death at the age of 80 years.

Case Report

On July 27, 1946, a 70-year-old woman entered the office in a wheel chair. During June 1945, she noticed some weakness in the lower extremities, a weakness which progressed to require the use of a wheel chair by April 1946. There was associated pain between the shoulder blades, numbness of the lower extremities and loss of control of the bladder. There were numerous café-au-lait spots and pigmented nevi along the patient's trunk and along the left side of the neck. The salient findings in the examination were weakness of the lower extremities, a sensory level at approximately the 4th dorsal level, an area of tenderness to palpation over the 4th thoracic spinous process, and pathologic toe signs bilaterally. Because of the marked weakness of the lower extremities, station and gait and coordination of the lower extremities could not be tested. In view of this clinical picture a meningioma at the upper thoracic level was suspected.

She was admitted to Saint Francis Hospital in Santa Barbara on July 29, 1946. A spinal puncture done the following day revealed a complete block to bilateral jugular compression and a complete block to 3 cc. of Pantopaque at the 4th thoracic level. Importantly, the roentgenograms disclosed the characteristic diagnostic picture of vertebral hemangioma. There were many small areas within the body of the vertebrae where the substance of the bone had been absorbed. Some of this presented a honeycombed appearance, but in other places the spaces produced by this absorption alternated with vertical parallel striations of increased density in the bone. Irregular density of a type similar to that described in the 4th vertebra was seen in the inferior portions of the 2nd and 3rd vertebral bodies, but the degree was not as marked as in the 4th. It was concluded that this was primarily hemangioma of bone, which in the form of an epidural tumor was reducing the space available for the spinal cord and its membranes.

Because of the patient's age and general condition, as well as the hazard of laminectomy under such circumstances, radiation therapy was believed the treatment of choice. This was started on August 2, and was completed August 29, 2,500 r being given anteriorly and posteriorly. Improvement was noticed 1 week after therapy had been instituted.

When seen on September 25, she was able to move her legs, the previously noted sensory level had disappeared, the pain in her back had improved as had control of her bladder. When she was examined March 13, 1947, she walked into the office with the aid of a cane. She had given up the wheel chair. If she walked too much, she noticed some tightness in the right leg. During the past year she had not had any particular pain in her back.

She was readmitted to the Saint Francis Hospital on Sept. 15, 1947. Some 8 days prior to this she had had a severe epistaxis. About this same time she had attended the funeral of her son-in-law, which event had been disturbing emotionally. Before this episode her son said she had been working hard and had seemed well. Moreover, she had walked about the cemetery without any particular difficulty. Examination disclosed rather noticeable weakness of the lower extremities, but no definite sensory level. There was a suggestively positive Babin-
skis sign on the left side, negative on the right. Again there was tenderness to palpation over the upper dorsal region of the spine. It was believed the weakness was best explained on the basis of her vertebral hemangioma and that additional radiation therapy was advisable. Accordingly, 2,500 r were administered during this second hospitalization.

She was examined again on June 25, 1948. At this time she walked well and had excellent power in both legs. Her blood pressure was 200/110. On April 1, 1949, at the age of 73 years, she looked well and again walked without difficulty, but complained of shortness of breath and precordial pain.

Until her death at the age of 80 years on March 13, 1957, she was seen at intervals of 6 months to a year. During this time she managed to get along well. Her death, which occurred suddenly, was believed to be the result of coronary occlusion. No necropsy was obtained.

Discussion

Hemangiomas of the vertebral column are benign, slowly growing tumors of cavernous or capillary structure, occurring more frequently in women and at an age distribution between 12–76 years. In clinical cases the thoracic portion of the vertebral column from T3 to T10 is affected most frequently, and particularly T4.

Cobb\(^1\) found cutaneous hemangiomas of the skin occurring in the same dorsal segment in which an epidural hemangioma was uncovered at operation. He also concluded that cutaneous nevi are at times diagnostically valuable when the central nervous system is involved segmentally.

Compression of the spinal cord and nerve roots is considered the result of three different causes: (1) hypertrophy or "ballooning" of the posterior cortex of the vertebral body or enlargement of the laminae and facets subsequent to angiomatous invasion, (2) extension of the angiomata into the epidural space, and (3) compression fracture of the involved vertebral body.

The roentgenologic appearance of vertebral hemangioma is characteristic and is considered pathognomonic. The affected vertebra discloses a honeycombed pattern with thickened trabeculae running in the longitudinal axis of the affected body.

From a clinical point of view, while total and partial remissions for 1 or 2 years have been reported occasionally, a slow progression to paraparesis and paraplegia is a more common observation.

Ghormley and Adson\(^5\) divided the vertebral hemangiomas into 4 groups: (1) hemangioma with paraplegia; (2) hemangioma with symptoms of compression of the spinal cord, but without paraplegia; (3) hemangioma with local symptoms and signs, but without compression of the spinal cord; and (4) hemangioma without symptoms or signs.

It has been rather generally agreed that as long as the lesions remain asymptomatic treatment should be withheld, and if local pain or mild radicular symptoms are present, roentgen therapy generally is accepted as the treatment of choice.

Therapy in cases of compression of the spinal cord remains controversial. Over the years it would seem that the consensus of opinion is that irradiation should be used as a primary form of treatment in cases of mild, local or radicular symptoms, and that it should be used under careful supervision in instances of moderately severe compression of the spinal cord with slow progression of symptoms. Laminectomy is indicated in the more severe cases of compression of the spinal cord if there is a faster rate of progression of symptoms or if roentgen therapy has failed. Irradiation should never be omitted following operation.

In the present case irradiation was successful in relieving the patient's symptoms and findings over a period of 10 years, and was used first rather than laminectomy because of her age and the hazards of hemorrhage during operation.

Summary and Conclusions

1. A case of hemangioma involving the 2nd, 3rd and mainly the 4th thoracic vertebrae and associated with compression of the spinal cord is presented. This 70-year-old patient made an excellent recovery with radiation therapy alone, and remained well until her sudden death from other causes at the age of 80 years.

2. Vertebral hemangioma in association with compression of the spinal cord is a rare condition, some 64 cases having been collected by Bell\(^1\) in 1955.

3. While the roentgenographic appearance of vertebral hemangioma is characteristic and pathognomonic, until more recent years the diagnosis was rarely made before operation or necropsy.

4. It is believed radiation therapy should be used as a primary form of treatment in cases of mild, local or radicular symptoms. In those patients with moderately severe compression of the spinal cord with slowly progressing symptoms, radiation therapy under careful observation should be carried out. Laminectomy is indicated in the more severe cases of compression of the spinal cord if there is a faster rate of progression of symptoms or if radiation therapy is ineffective.

5. Laminectomy should always be followed by radiation therapy.

References