HAEMANGIOMA OF VERTEBRA: A CAUSE OF COMPRESSION OF THE CORD.

BY

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Until recent years simple tumours of the bones of the spinal column have been regarded as rare. Haemangiomas have now been reported in many bones, but occur especially in the vertebral column and in the skull. Before 1927 eleven cases of vertebral haemangioma had been recorded, the majority of which presented symptoms of compression of the cord, and Schmorl had also drawn attention to the frequent finding of these growths if searched for at autopsy. At this date Makyrcostas, working in Erdheim's institute in Vienna, undertook a routine examination of vertebral columns at autopsy, and found 12 columns containing haemangiomas to the total number of 41. These patients died from various causes; in only one were there symptoms of cord compression and a diagnosis of caries of the fifth lumbar vertebra had been made. Töpfer in 1928 carried the matter much further. He made sagittal sections of the vertebral columns of 2,154 cadavers. In 257 of these cases (11.98 per cent.) he found haemangiomas of the vertebrae. In 34 cases the spinal growths were multiple, and similar growths were found nine times in the sternum, thrice in the skull, thrice in the femur, and four times in the liver. The growths varied greatly in size and none of them encroached upon the spinal canal, nor was there any evidence that compression symptoms had appeared in any of the cases.

Other observers have reported isolated cases, and in January, 1930, Bucy and Capp gave an admirable analysis of the reported cases with special reference to diagnosis by the radiological appearances. Radiograms of vertebral haemangioma have also been published by Perman and by Gold, and the X-ray picture can now be regarded as diagnostic.

With a personal case which they describe, Bucy and Capp record a total of 12 cases in which symptoms were present, in all instances those of compression of the cord.

Clinically, therefore, the condition is rare, but its recognition is important from the point of view of treatment. Among Bucy and Capp's 12 collected cases, five were subjected to laminectomy: of these three died from haemorrhage and shock, and the other two almost died, but finally recovered with complete relief of compression symptoms. In both of the successful cases operation was followed by X-ray treatment.
PERSONAL CASE.

A further case is now reported to illustrate the clinical features and radiological appearances, and especially the result of X-ray treatment without operation.

Male, aged 51. The patient was seen first on July 18, 1929.

History.—For about three months he had observed a sense of increasing fatigue in the legs after walking; the symptoms then became abruptly worse and the feet felt numb. There was no pain, but some 'pins and needles' in the legs, and a sense of constriction around the lower part of the trunk. There were no other complaints and his previous and family history contained nothing of note.

Examination.—The general condition was good and there were no signs of disease in the cardiovascular system, lungs or abdomen. Nothing abnormal was found in the cranial nerves or upper limbs. The abdominal reflexes were active throughout, and there were no bladder or rectal symptoms. The knee- and ankle-jerks were unusually active, but there was no ankle clonus and the plantar reflexes were flexor. Slight swaying was present in Romberg's test, but otherwise co-ordination and joint sense appeared normal and no spasticity or ataxia was detected in walking. Vibration sense however was absent in the shins, though appreciated normally elsewhere. Except that pin-prick felt a little dead on the thighs, no sensory loss to pin, touch, heat or cold was detected. The blood Wassermann was negative.
Re-examined two months later the condition had advanced, and the gait was distinctly ataxic and slightly spastic. The abdominal reflexes were much impaired below the umbilicus, especially on the right, the deep reflexes were exaggerated and the plantar reflexes were extensor. There was definite impairment of sensibility to pin-prick up to and including the ninth thoracic segmental area on the right and the first lumbar area on the left. No clinical evidence of bone disease was found in the spine.

The cerebrospinal fluid was clear, Wassermann negative, cells 0, globulin 0, albumen 0.08 per cent. Jugular compression caused only a slight increase in flow, and lipiodol introduced by cistern puncture was completely arrested at the upper border of the eighth thoracic vertebra (fig. 1); subsequently, and before treatment, the lipiodol made its way through.

The X-ray appearances in the eighth thoracic vertebra were identical with those described by Perman, Gold, and Bucy and Capp (fig. 2). The body of the bone was slightly narrower on the right and at the front than on the left and at the back. The anterior and posterior margins were indistinct and fluffly and the pedicles broadened. The whole of the substance of the body and of the pedicles was mottled or rather striated, a characteristic appearance which has been shown to be due to two factors, viz., (1) thickening of the vertical bony trabeculae, (2) widening of the intertrabecular areas which are filled by the dilated cavernous blood spaces of the hæmangioma.
The intervertebral discs above and below were intact, but a soft tissue shadow was seen in the antero-posterior view on both sides of the affected bone, extending on the left side as low as the eleventh body: we are unable to explain the nature of this shadow (fig. 3).

It was decided to try the effect of X-ray treatment alone, and this was commenced 10 months after the onset of symptoms; details of the treatment are given later.

There was immediate improvement which continued uninterruptedly. Walking gradually became normal, and all numbness and tingling dis-appeared. The patient has now been back at work for over a year, and can walk ten miles without undue fatigue: the only complaint is of some smarting in the shins and feet and a feeling of heat in the feet at times. The abdominal reflexes are everywhere normal. The knee- and ankle-jerks remain unusually active, but the plantar reflexes are clearly flexor. Power is good and equal, and there is no sensory loss in any area.

The change in the X-ray appearance of the affected vertebra is striking (fig. 4), but does not show so well in prints as in the films. The margins of the body and pedicles have become much more clearly defined, while
increased thickening of the bony trabeculae is very evident. Little if any change has occurred in the paravertebral soft tissue shadow.

DISCUSSION.

Hæmagioma of a vertebra, when it encroaches upon the spinal canal, gives rise to a compression syndrome which has no distinctive characteristics. A sudden onset of symptoms, or a sudden aggravation thereof, is perhaps suggestive, and the absence of pain in most of the recorded cases is notable. The mid-thoracic region of the spine is most commonly involved. Females have been affected more than males in the proportion of 9 to 2. Nearly all the subjects have been adults, but otherwise there is nothing distinctive in the age incidence. The radiological appearances are decisive.

Bucy and Capp suggest that laminectomy is always indicated and X-ray treatment should never be used alone, as it would be too slow in relieving compression. It should be noted, however, that in the only two successful cases hitherto reported X-ray treatment immediately followed operation. The operative mortality hitherto has been 60 per cent. The present case suggests that X-ray treatment is indicated primarily.
DETAILS OF X-RAY TREATMENT.

The first three series of X-ray applications were made with an apparatus giving a peak kilovoltage of approximately 145, with 4 milliampères passing through the tube. A filter of 0.25 mm. of Cu was used. The details of the series are as follows:

1ST SERIES.—40 cm. focus skin distance (F.S.D.); 10 × 8 cm. areas.
   Six applications from November 18 to December 20, 1929.
      Total dose 1/3 unit skin dose (U.S.D.).
   2. Left at same level tilted toward mid-line. 1/2 U.S.D.
   3. Right (similar to left). 2/3 U.S.D.

2ND SERIES.—35 cm. F.S.D.
   Three applications from January 21 to February 4, 1930.
   1. Centre 1/3 U.S.D.
   2. Left 2/3 U.S.D.
   3. Right 2/3 U.S.D.

3RD SERIES.—35 cm. F.S.D.
   Two applications on March 4 and 11, 1930.
   1. Centre 2/3 U.S.D.
   2. Left 1/3 U.S.D.
   3. Right 1/3 U.S.D.

A change was then made to an apparatus giving a peak kilovoltage of approximately 185 with 2 milliampères passing through the tube. Filtration was equivalent to 0.45 mm. Zn and 3 mm. Al. At each application the F.S.D. was 30 cm. and a single area of 12 × 10 cm. centred on the eighth dorsal vertebra posteriorly was used. The dates of application and the dose given are as follows:

   1. May 18, 1930. 2/3 U.S.D.
   2. July 8. 2/3 U.S.D.
   3. September 2. 2/3 U.S.D.
   4. November 4. 2/3 U.S.D.

No X-ray treatment has been given since November 4, 1930.

REFERENCES.

1 VIRCHOW, R., Die krankhaften Geschwülste, 1862-3, 373.
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