

## Osteosarcoma of the Humerus with removal of the arm, clavicle and scapula; death from sarcoma of lung nine months later

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A. W., a young man of nineteen years, of Palmyra, Wis., was referred to me by Dr. Keithley, April 9, 1903, for operation. I saw the case with Dr. Keithley a few weeks prior to this, at which time sarcoma was diagnosed and operation advised and rejected...

Patient never had any serious illness until his present trouble began, and was always of average strength... The latter part of January, 1903...he had some pain in his right elbow, which persisted for two or three days. He noticed, when rubbing his arm, an almond-sized swelling at about the middle of the posterior surface of the arm. This continued to enlarge, as also did the entire arm, and he saw Dr. Keithley for the first time Feb. 23, 1903... On Feb. 30th another swelling was noticed at the lower anterior portion of the arm, which was tender on pressure... During the month of March the whole extremity rapidly enlarged, the patient lost flesh and strength, and there was an increasing amount of pain.

On admission to the Palmyra Springs Sanitarium, April 9, 1903, not more than ten weeks following the first evidence of trouble, patient was weak, emaciated, mentally depressed, and suffering much pain... Blood examination at this time showed 5,000,000 red and 26,000 white corpuscles. There was a general enlargement of the right upper extremity, there being a difference of six inches in circumference at different parts between the right and left extremities. Morphine was frequently required to relieve pain. At this time no evidence of disturbance was discovered elsewhere.

On April 11, 1903, I operated... The arm was only depleted of blood to the extent possible by elevation of the extremity, bandaging not being resorted to. The Paul Berger interscapulo-thoracic amputation was done, the entire upper extremity being removed with the exception of the inner third of the clavicle. After removal, by the Gigley saw, of the middle third of the clavicle, the subclavian artery was easily tied with a catgut ligature, but owing to faulty technic some delay was experienced in the ligation of the subclavian vein. With the exception of that escaping from the engorged extremity, little blood was lost. The patient's condition remained fairly good until after the severance of the brachial plexus, when he became almost pulseless and it seemed as though he would not rally from the great shock. At the completion of the operation 500 cc. of normal salt solution was injected hypodermically in the groin, and the same amount placed in the rectum. The lower extremities were bandaged, and the patient placed in a warm bed.

Twenty-four hours after operation patient had rallied nicely, temperature 100.6 degrees, pulse 128, and was feeling comfortable. After forty-eight hours the temperature did not rise above 99.5 degrees, the pulse gaining in strength daily. He was sitting up on the third day and made a satisfactory

convalescence, the wound healing primarily. The stitches were all removed on the 10th day, and the patient went home April 27, sixteen days after operation.

Forty-eight hours after operation blood examination showed 3,500,000 reds and 8,850 leucocytes. The amputated extremity weighed 17½ pounds. (It) was sent to the Pathological Department of the University of Chicago, and Prof. Hektoen made the following report:

...“The large swelling below the deltoid was formed by a large cyst, whose walls were made up by the muscles and fascia, and its content, a dark red fluid, that seemed to be nearly pure blood. Beneath the belly of the biceps was a small cyst containing about 60 cc. of a similar fluid. The large cyst contained 450 cc...

“The upper half of the humerus, as high as the surgical neck, was very abnormal, especially the posterior and lateral surfaces. In one place the bone would be badly eroded and honeycombed, while immediately adjoining that there would be outgrowths as large as a walnut. These bone outgrowths were quite hard and nodular. There were also masses of pulpy consistence extending out from the bone, but even these generally contained bone spicules.

“Microscopically the pulpy tissue attached to the bone is of the structure of a myeloid sarcoma. It consists of a ground work of spindle cells, surrounding which are many multi- and uninuclear giant cells...

“DIAGNOSIS: Giant cell sarcoma of the humerus, with formation of blood cysts. Simple hyperplasia of regional lymph glands.

“The absence of sarcoma cells except in the local growth is most encouraging, but it must be taken into consideration that but a minute mass of the surrounding tissue and lymph glands could be examined microscopically. However, fortunately, this type of sarcoma does not seem prone to metastasis.

After leaving the Sanitarium patient continued to gain in strength and weight, and general health, until June 1, 1903,... when he complained of some pain in the right chest, anterior and posterior, opposite the 4th and 5th ribs, and coughed a little... A little later he began to have some difficulty in breathing, but his general health remained fairly good. Four months after operation his health began to fail, his cough grew worse, there was a large area of dullness in the right lung, and from this time on he failed steadily. He died Dec. 7, 1903, eight months after operation, and ten months after first appearance of trouble in his arm.

No autopsy was allowed, but it is presumed that he died of sarcoma of the lung.