50 Years Ago in CORR

The Present Trend in Treatment of Osteogenic Sarcoma

Albert B. Ferguson, Sr. CORR;14:63–69

This month's symposium is devoted to papers presented at the 2008 Musculoskeletal Tumor Society Meeting in Phoenix, AZ, November 6–8, 2008. These papers reflect progress in the treatment of dreaded malignancies of the musculoskeletal system. Many malignant tumors of the musculoskeletal system are resistant to radiation therapy, and most had high death rates before the advent of chemotherapy in the 50s and 60s. As alternative chemotherapy agents were introduced, along with a better understanding of how they are used, sometimes in combination, the survival rates from most of these tumors markedly increased through the 70s and 80s, although some evidence suggests little further progress has been made in recent years [4]. Apart from multiple myeloma, osteogenic sarcoma is the most common of these primary bone tumors and sadly these most occur in patients between 10 and 20 years of age.

It is difficult to compare older literature to current literature in large part because our ability to diagnose, grade, and stage these tumors has advanced over the decades: many tumors originally diagnosed as osteogenic sarcoma 50 years ago or more may not have in fact been osteogenic sarcoma. Codman, as early as 1926 in a Classic we republish in this volume [2], cited an early study [3] stating that "Perhaps the most surprising fact of

the whole study is that of 148 cases, sent in as possible bone sarcoma, only 68 could be considered in fact to be cases of malignant newgrowth of bony origin; the remaining 82 cases proving on more detailed study to be metastatic tumors of bone (29 cases), sarcoma primary in the soft parts (28 cases), inflammatory conditions (11 cases), or tumors of a non-sarcomatous type (14 cases)." Five years after Codman instituted his registry, and regularly solicited cases from the over 7,000 members, he had received only 17 cases [2]. Codman recognized the difficulty in diagnosis, and established 25 criteria based on the clinical examination, the radiographs, and the histologic sections. He further stated, "In our series of 200 standard osteogenic sarcomata nearly 50 per cent are still living under the 5 year limit."

"But we must confess that even the most experienced after the study of all the 650 registered cases must sometimes modify his diagnosis by the ultimate results. If a case diagnosed as osteogenic sarcoma does not die within 5 years with metastases in the lungs all criteria should again be scrutinized with the greatest care." (Italics his.)

The article we highlight by Dr. Albert B. Ferguson, Sr. briefly summarized a number of papers on osteogenic sarcoma presented at the

Combined Meeting of the Orthopaedic Associations of the English-Speaking World in Washington, D.C., in May, 1958. The primary treatment in those days was early amputation, with some treated by adjunctive radiation. In Green's series from the Children's Hospital, Boston, all patients treated from 1928 to 1946 had died. In Ferguson's own series of 134 patients 11 survived more than 5 years, with somewhat better survival in those who had later, rather than earlier, amputation. (Although not mentioned by Ferguson, this might have been because those patients who had early amputation had more aggressive disease.) These data all came from the pre-chemotherapy period. Campanacci suggested that the 10-year survival rate without chemotherapy was about 15% [1].

In the past 50 years, grading of the tumors and staging of the disease has allowed us to better select treatment and predict the outcome. The local recurrence rate is now reportedly around 2–3% after amputation and 5–7% after preoperative chemotherapy and "conservative surgery" [1]. Perhaps some of the greatest advances in recent years relate to surgical techniques to preserve limbs and avoid amputation. According to one source, limb-salvage with adjunctive chemotherapy is now the treatment of choice in 90% of these patients, and the data suggest limb salvage results in similar

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survival to the traditional amputation [5]. This issue of CORR contains a number of such descriptions.

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