

Bone Sarcoma ... Turning the Corner

Bone sarcoma represents a rare but deadly tumor. The two most common types are Ewing's family of tumors and osteosarcoma.

Bone sarcoma has a bimodal peak incidence: one in adolescence and the second in late adulthood. In adolescents, bone sarcoma accounts for approximately 15% of all malignancies. Thus it is most prevalent at a challenging time of life: adolescence and young adulthood. The treatment for cure typically involves surgery, radiation, and at least 1 year of chemotherapy. If the disease is not treated early, it is fatal. There are no drug therapies for bone sarcoma that are approved by the US Food and Drug Administration.

For decades, the sole treatment for bone sarcoma was surgery — amputation of the affected limb. If the tumor was unresectable and/or advanced, there were *no* options. Even in patients with resectable tumors, over half died of their disease. Today, however, the picture looks brighter for patients with bone sarcoma. After decades of incremental advances in the care of patients with this disease, we have finally turned the corner. Amputation is no longer always required, and limb-salvage therapy is now the norm. We have improved the 5-year survival rate of resectable bone sarcoma to over 80% with the use of multi-agent chemotherapy, and tumors that cannot be resected can be controlled with combination chemotherapy and radiation. However, we still do not have good treatment options for patients with metastatic disease.

In the past few years we have seen an explosion in new targeted therapies for not only the most prevalent tumors such as lung, breast, and colon cancer but also the rarest of tumors such as gastrointestinal stromal tumors (GISTs). The development of imatinib for patients with GIST should serve as a model for further development of targeted therapies in sarcoma. Currently there are more than a dozen targeted therapies in the clinical trial setting for patients with metastatic bone sarcoma. I suspect that the treatment of bone sarcoma will look drastically different within the next 5 years.

The first challenge of treating bone sarcoma is making an accurate diagnosis. The involvement of an experienced sarcoma pathologist is critical. In the first article in this issue, Dr Bui and colleagues review the challenges encountered routinely regarding intraoperative frozen section of musculoskeletal lesions.

Bone sarcoma in the past was a disease that required amputation, leaving a young adult with a permanent disability. However, with the advances made in surgical management, amputation is now rarely

required. Dr Marulanda and associates have written a comprehensive review on this topic, describing the advantages and disadvantages of amputation and limb-salvage techniques for the treatment of osteosarcoma.

Radiation therapy is an integral part of the treatment of bone sarcoma, and we have become much more proficient at delivering radiation in an efficacious manner and optimizing radiation with chemosensitizers. Drs Patel and DeLaney provide an update on the current and investigational options and the use of intensity-modulated radiation and proton beam therapy. Dr Anderson and colleagues then review the use of chemotherapeutic radiosensitizers to improve cancer control.

Advances in our understanding of the molecular abnormalities that drive cancer have led to an explosion of targeted therapies not only in the more prevalent cancers but also in rare sarcomas such as GISTs. Progress of this nature is also being made in the arena of bone sarcoma. Dr Shor and colleagues review our current knowledge of the therapeutic potential of tyrosine kinase inhibitors in sarcoma.

Finally, the challenges that confront adolescents and young adults with sarcoma go well beyond surviving cancer. Surviving their cancer can leave both physical and mental scars that can severely impact a person's life. Dr Soliman and I provide a review of the current issues faced by adolescent and young adult cancer survivors.

This review of bone sarcoma is the first of its kind for *Cancer Control*. It is a tremendous opportunity to demonstrate that, as a team, we are indeed turning the corner in the treatment options and comprehensive care for children and adults with bone sarcoma. The treatment options continue to expand.

Before closing, I would like to draw your attention to three more articles included in this issue. The first two are part of our "Cancer, Culture and Literacy" section. A study by Drs Beckjord and Klassen adds to the evidence that consideration of cultural constructs is an important yet often overlooked tool in increasing mammography and reducing the disparities in breast cancer outcomes for African American women. In a similar vein, Dr Palmer and associates discuss racial disparities seen in colorectal cancer outcomes among African Americans. They suggest that efforts to increase awareness and promote screening would lead to a reduction in racial disparities for this disease. Finally, we have included a special report by Dr Narvaez-Lugo and colleagues from Puerto Rico where transplantation is not currently available as a management option for hepatocellular cancer. They show that the use of both trans-

catheter embolism and percutaneous ethanol injection increased the incidence of antitumor responses in the disease, although this benefit did not translate into longer survival.

As we begin 2008, we can hopefully look forward to another year of progress in managing our patients with bone sarcoma — and indeed with *all* types of cancers — by minimizing the impact of the disease, expanding our diagnostic and treatment options, and continually investigating new standards of care.

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