Journal of Orthopedic Oncology
ISSN 2472-016X

Aigner, J Orthop Oncol 2020, 6:3

Editorial Open Access

Methodologies and Management of Bone Diseases in 2020

Kerstin Aigner*

Department of Orthopedic Oncology, Institute of Health Medicine, Alberta, Canada

***Corresponding author:** Kerstin Aigner, Department of Orthopedic Oncology, Institute of Health Medicine, Alberta, Canada, E- mail: akerstinjo@umn.ca*

Received date: November 06, 2020**; Accepted date:** November 23, 2020; **Published date:** November 30, 2020

Citation: Aigner K (2020) Advancements in Orthopedic Oncology. J Orthop Oncol 6:e145

EDITORIAL NOTE

Spinal metastases are the most common type of bone metastasis and have a prevalence of 30-50% in cancer patients. Spinal malignancy leads to spinal instability, pathologic fractures, neurologic deficits, and decreased quality of life. Management of spinal metastases is primarily palliative and includes consideration of surgery, radiotherapy, medical management, and palliative therapy [1].

Determination of the appropriateness of invasive management such as multi-level decompression and stabilization requires accurate preoperative estimation of survival [2,3]. A number of prognostic factors have been identified in this population but routinely collected laboratory markers have yet to be fully understood or utilized. Serum Alkaline Phosphatase (ALP) and Lactate Dehydrogenase (LDH) are such marker that routinely collected in spinal metastatic disease patients but remains underutilized for prognostication.

Alkaline phosphatase has been well-established as a marker of hepatobiliary pathology and bone turnover and mineralization. This metalloenzyme is expressed on the cell surface of osteoblasts and serum levels of the enzyme correlate with increased osteoblastic activity. In osteolytic bone metastases this enzyme is elevated secondary to a local bone formation response in an attempt to compensate for the predominant destructive lesion. In osteoblastic bone metastases, alkaline phosphatase is elevated secondary to local stimulation of osteoblasts.

LDH is a ubiquitous enzyme that plays a central role in anaerobic glycolysis, as it catalyzes the reversible conversion of pyruvate into lactate. It is used to maintain glycolysis as an alternative source of energy during hypoxic stress and subsequent high LDH level in cytoplasmic compartment [4]. Furthermore, higher LDH is significantly correlated with increased vascular density and decreased infiltration of lymphocytes within the tumours. Therefore, the increased LDH level reflects these alterations and suggests more severe tumour burden, tumour angiogenesis and tumour progression conditions, all of which lead to the poor prognosis of malignant tumours.

One of the most dreaded complications following total joint arthroplasty (TJA) is deep infection. With the advent of highly crosslinked polyethylene and other technological advances, one of the most common reasons for revision joint arthroplasty is now deep infection. Antibiotic-loaded bone cement (ALBC) was first introduced and used in lieu of plain bone cement (PBC) by Buchholz and Englebrecht in 1970 in an effort to decrease infection rates [5]. The literature has not been clear on the effectiveness of ALBC in decreasing infection rates in TJA patients. Furthermore, studies have reported that when high doses antibiotics (>4.5 grams of antibiotic powder per 40 grams of cement) are used, mechanical complications such as hardware loosening can occur much more frequently.

Renal cell carcinoma is the most common form of kidney malignancy in adults. It is derived from the lining of the proximal convoluted tubules and is usually hypervascularized. It is the 14th most common malignancy worldwide, with an overall prevalence of 2%-3% of new cases per year. Its incidence is at 15 per 100,000, and is more common in males than in females.

In musculoskeletal oncology biopsy is considered essential for the accurate diagnosis [6]. Management of malignant bone sarcoma requires histologic typing and the degree of tumour differentiation. Biopsy is usually taken after completion of clinical and radiological assessment. Open biopsy was previously considered the gold standard procedure to get enough adequate representative tissue for histopathological assessment [6]. In our local practice, most of orthopaedic surgeons usually take open biopsies with the presumption that open biopsy does not provide adequate tissue for histological diagnosis. In 2013 we established the first specialized musculoskeletal oncology unit in Khartoum Teaching Hospital, Khartoum, Sudan. Adequate training of residents on the technique of needle biopsy was undertaken.

References

1. Lee CS, Jung CH (2012) Metastatic spinal tumor. Asian Spine J 6:71-87.
2. Ciftdemir M, Kaya M, Selcuk V, Yalniz E (2016) Tumors of the spine. World J Orthop 7:109-116.
3. Tateiwa D, Oshima K, Nakai T, Imura Y, Tanaka T, et al. (2019) Clinical outcomes and significant factors in the survival rate after decompression surgery for patients who were non-ambulatory due to spinal metastases. Journal of Orthopaedic Science. The Japanese Orthop Ass 24:347-352.
4. Buchholz HW, Engelbrecht H (1970) Depot effects of various antibiotics mixed with Palacos resins. Chirurg 41:511-515.
5. Bickels J, Jelinek JS, Shmookler BM, Neff RS, Malawer MM (1999) Biopsy of musculoskeletal tumors. Clin Orthop Relat Res 368:212-219.
6. Pohlig F, Kirchhoff C, Gradinger R, Eisenhart-Rothe RV, Rechl H (2010) Bone and soft tissue sarcoma: Principles of biopsy. InFo Onkologie 13:34-37.