Bone cancer metastasis

Health & Medicine

Bone Cancer Metastasis Introduction Bone Cancer Metastasis refers to cancer that begins in other body parts and then spreads to the bone. It is one of the commonest cancers in the US and of the roughly 5533, 400 Americans who die from cancer each year; at least two-thirds have bone metastases (Keller &Chung, 2004). Bonecancerprognosis. org records that approximately 60- 84 percent of patients with cancer contract bone metastasis and that 70 percent of these endure pain syndrome, which is hard to manage, of which 50 percent die without sufficient pain relief with a poor life quality. Some cancer cells, in the late stages of cancer, can leave the primary area and spread to the bone. Nearly all cancer types can spread to the bones. However, bone metastases generally spread from the prostate, the lungs, and the breasts to the bone. Nevertheless, bone cancer cells still resemble those of the organ from which they came from and they should be treated as such (Hasan, 2009). The skull, spine, ribs, pelvis, leg long bones, and the upper arm are the most common locations of spread in the skeleton. These locations interestingly correspond to bone marrow areas that exhibit high levels of the production of red blood cells, which have the responsibility of transporting oxygen to body tissues (American Academy of Orthopedic Surgeons, 2007). Symptoms Some of the commonest symptoms include marked pelvis or spine pain or extremities because the tumor weakens the bone, tenderness or swelling in the affected area. At times, patients develop bone fractures. At other times, the bone does not break but it becomes so frail that a break is impending. Other symptoms include weight loss, fatigue, and fever. If cancer spreads to the spinal bones, patients risk developing nerve damage, which could bring about loss of the use of the arms and/or legs or paralysis. These a re referred to as ‘ impending fractures’ and they

may compel patients to have bed rest for a long time, the result of which is possible chemical imbalances in the blood for instance, hypercalcemia/increased calcium levels. These patients mostly suffer from anemia due to the decreased production of red blood cells. General loss in quality of life is the greatest concern for patients suffering from metastatic bone cancer (American Academy of Orthopedic Surgeons, 2007). It is important to note that these symptoms are not a sure sign of cancer and if one suspects any of them, he/she should consult a doctor. Diagnosis On suspecting metastatic bone cancer, the doctor performs a complete medical examination, which may include a blood test since bone tumors can be linked with greater levels of particular proteins in the blood. He/she may also carry out an X-ray in addition to other bone(s) scans and if scans and X-ray results indicate the presence of a tumor, he/she may then perform a biopsy (removal of a tissue sample). Next, a pathologist examines the cells to establish if it is cancerous, and in case it is cancerous, he/she determines the cancer type (Cancerindex. org, 2003). Treatment Metastatic bone cancer patients have need of a team-approach to care. There is need for a medical oncologist co-working with pain management experts and social workers, a radiation oncologist as well as an orthopedic surgeon who is very conversant with this condition. Scheduled surveillance or follow-up should be planned with each of these persons as the surgeon and/or oncologist determines (American Academy of Orthopedic Surgeons, 2007). According to Keller and Chung (2004), the treatment of bone metastasis presents a great challenge. Bone metastases from different forms of cancers exhibit different progression patterns and properties, suggesting distinct biological mechanisms. Several treatment options include surgical treatment to

prevent a break or to treat an actual break, radiation, and medical treatment/management, which includes bone-specific therapy, endocrine therapy, chemotherapy, tamoxifen therapy, or a blend of treatments (American Academy of Orthopedic Surgeons, 2007). Pain medication, radiation treatments, or radiofrequency ablation and other newer minimally invasive surgical techniques can relieve the pain. Prognosis Generally, the development of modern chemotherapy has led to a notable improvement on the chance of recovery for bone cancer patients. Recovery chances hinges on various influences such as the bone cancer type, the person's general health, if it has spread, location, the size of the tumor as well as other individual factors. How much of the main tumor is removable through radiotherapy and/or surgery in addition to how the tumor responds to chemotherapy is also imperative (Cancerindex. org, 2003). Management and Control In clinical practice, it is hard to manage and control bone cancer metastasis. Presently, scientific developments in the detection and treatment of cancer have led to prolonged life expectancy. However, in the phenomenon of bone pain in cancer, the development of considerably effective current treatment strategies is not considerably efficient. The drugs used are not completely effective since most bone pain palliative treatments are rooted in clinical studies on pain management or in ill designed experimental models. Currently, lack of basic science knowledge in bone pain physiology is a major impediment of the development of new, safe treatments for bone pain control (Bonecancerprognosis. org, 2010). Future Directions Several possible targets that play roles in this condition have been identified. There is need for extra exploration of the basic pathophysiology of metastatic bone cancer in order to help in the assessment and prioritizing

which factors to target and the way in which they can be targeted efficiently and to assist the enhancement of proof of concept studies. The use of smaller clinical studies with more distinct clinical end-points is one approach that needs exploration, remembering that different patients require definite treatments that keep in mind the stage and form of metastatic bone cancer and tumor type and other comorbid conditions. Multistate modeling could be an attractive approach to the analysis of metastatic bone cancers. It can combine information on the features of the disease process, results of event occurrence on the risk of death or ensuing clinical events, and the cumulative disease burden anchored in the projected number of events. Studies are required to establish how doctors can better predict the cancers that are likely to metastasize to bone in order to choose patients for preventive bone-targeted therapeutic strategies. Moreover, in future therapies, the combination of pharmaceutical agents will play a significant role. There is need for carrying out both clinical and animal studies using bisphosphonates alongside other agents in order to try to better the benefits that current bisphosphonates are already achieving (Lipton, et al., 2006). Conclusion Apparently, metastatic bone cancer is one of the commonest cancers in the US. It starts from other body parts and spreads to the bone. It is therefore important for cancer patients to discuss with their oncologist their risk for developing metastatic bone cancer. In the event that the patient feels any pain, particularly in the, arms, legs and back, he/she should notify his/her doctor at once. Experiencing pain even without activity is mostly concerning and the patient should seek medical help. This condition has led to numerous deaths and consequently, the provision of effective and accessible medications to manage it is vital. There has been an improvement

in earlier diagnosis and treatment such that patients with this condition are living longer. References American Academy of Orthopedic Surgeons, (2007). Metastatic Bone Disease. Retrieved from http://orthoinfo. aaos. org/topic. cfm? topic= A00093 Bonecancerprognosis. org, (2010). Bone Cancer Prognosis, Causes, Symptoms, Diagnosis, Pain Treatment. Retrieved from http://www. bonecancerprognosis. org/2010/01/bone-cancer-metastasis. html Cancerindex. org, (2003). Bone Cancer FAQ. Retrieved from http://www. cancerindex. org/ccw/faq/ Hasan, H. (2009). Bone Cancer: Current and Emerging Trends in Detection and Treatment. New York: The Rosen Publishing Group. Keller, E. T. & Chung, L. W. K. (2004). The Biology of Skeletal Metastases. New York: Springer. Lipton, A., et al. (2006). Advances in Treating Metastatic Bone Cancer: Summary Statement for the First Cambridge Conference. Clinical Cancer Research. 12(20 Pt 2): 6209s-6212s.