Osteogenic Sarcoma in Children and Young Adults
LeLe Aung,1 MD, MPH, Aung Soe Tin, 2 MBBS, MPH, Thuan Chong Quah, 3 MBBS, MMed, Robert W Pho, 4 FRCS, MD

Abstract

Introduction: More than 80% of children with osteogenic sarcoma (OS) relapse and 35% to 40% of them die within the first 2 years after diagnosis due to relapse. We investigated the incidence, treatment modalities used and the outcome of patients with OS treated in Singapore. Materials and Methods: Patients with OS treated in Department of Paediatrics KK Women’s and Children’s Hospital (KKH) and National University Hospital (NUH) between January 1994 and June 2011 were reviewed. Chemotherapy was as per the European Osteosarcoma Intergroup (EOI) and as per the Memorial Sloan-Kettering Cancer Centre’s (MSKCC) T12 protocols. Overall and event-free (EFS) 5-year survivals were calculated using Kaplan-Meier analysis and Cox proportional hazards regression analysis. Results: Of 66 patients with OS, 19 (29%) of them presented with metastatic OS. The median age of diagnosis was 12.1 years with 5-year overall survival of 61.7% (95% CI, 48.1 to 75.3). The 5-year overall survival for those with non-metastatic and metastatic OS was 73.1% (95% CI, 58.1 to 88.1) and 34.7% (95% CI, 8.7 to 60.7, \( P = 0.007 \)) respectively. The 5-year overall survival for those treated as per the MSKCC T12 and EOI was 72.4% (95% CI, 52.6 to 92.2) and 54.3% (95% CI, 36.3 to 72.3, \( P = 0.087 \)) respectively. After controlling for confounding factors, patients with non-metastatic OS had higher 5-year EFS (HR, 0.228, 95% CI, 0.096 to 0.541, \( P = 0.001 \)) and overall survival (HR, 0.294, 95% CI, 0.121 to 0.713, \( P = 0.007 \)) compared to those with metastatic OS. Non-metastatic OS patients treated as per EOI regimen had lower 5-year EFS (HR, 2.397, 95% CI, 1.012 to 6.678, \( P = 0.047 \)) compared to those treated per MSKCC T12 regimen. Conclusion: Multidrug combination chemotherapy including high-dose methotrexate (HD-MTX) and a multidisciplinary team approach introduced in 2003 in Singapore is well tolerated and can be safely delivered. The survival benefit between the 2 regimens still needs to be explored.


Key words: Primary bone tumour, Singapore