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Ifosfamide/etoposide without MAP in adult osteosarcoma patients with poor necrosis rates post neoadjuvant chemotherapy

**Background**
Chemotherapy in the treatment of osteosarcoma has improved survival.
Attempts have been made to improve outcomes in patients with poor necrosis rates post neoadjuvant chemotherapy (NAC).

**Patients and Methods:**
Patients diagnosed between January 1986 and August 2012 were retrospectively reviewed and stratified according to stage (localised or metastatic) and age (≤40 years; >40 years). Event free survival (EFS) and overall survival (OS) was calculated. In those with localised disease ≤40 yrs, survival was assessed according to necrosis rates post NAC (<90%; ≥90%). NAC consisted of two cycles of methotrexate alternating with doxorubicin/cisplatin (MAP). Those with ≥90% tumour necrosis continued on MAP. Patients with <90% necrosis received ifosfamide and etoposide (IE) post operatively.
Results:
Ninety-seven patients were included. Median age was 23yrs (Range 16 -75yrs) and 70% were male. Limb-salvage was performed in 77% of extremity disease. Of patients with localised disease (N=81), 5-year OS with a median follow up of 7 years (2-28.6) was 70% (p<0.0001). Patients aged 16-40 (N=68) with localised osteosarcoma had a significantly improved 5-year OS (74%) compared to those > 40 years (N=13) (42%) (p=0.004). Of the 68 patients with localised osteosarcoma ≤40 years, 62 were evaluated according to necrosis rates. In 33 patients who achieved ≥90% necrosis and continued MAP, 5 year OS was 82%. In 29 patients who had <90% tumour necrosis and received adjuvant IE, 5 year OS was 68% (p=0.15).

Conclusions:
Adult patients aged 16-40 years have comparable survival outcomes to paediatric patients. Postoperative ifosfamide/etoposide alone in patients with poor necrosis rates may improve outcomes.