

Medical treatment evaluation of diabetic foot osteomyelitis using ^{99m}Tc -HMPAO-labelled leucocyte scan and predictive factors of outcome

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Introduction-Aim: Evidence is growing on successful treatment of diabetic foot osteomyelitis (OM) with prolonged antibiotic therapy without the need of major surgical procedures. The aim of our study was to assess the role of ^{99m}Tc -HMPAO-labelled leucocyte scan (LS) in the evaluation of conservative treatment of diabetic foot OM and to identify factors associated with poor outcome. **Patients and methods:** Forty seven diabetic patients (aged 62.9 ± 9.3 yrs) under antibiotic treatment for pedal OM (mean treatment duration 6.9 ± 4.2 months) were included in the study. Ulcer grade, presence of peripheral neuropathy and peripheral vascular disease (PVD) (by means of NDS and absence of palpable pedal pulses in one or more sites, respectively), HbA1c and eGFR were recorded and analyzed for potential association with outcome of OM. Inflammatory blood markers (ESR, CRP, WBC count) were also measured. All patients underwent LS of the feet to evaluate response to medical treatment. Focal leucocyte bone uptake on LS was considered as sign of persistent OM, while absence of leucocyte uptake indicated cured OM. Final evaluation was based on long term clinical follow-up or bone biopsy in patients eventually underwent amputation. **Results:** Among the 47 cases of diabetic foot OM investigated, 31 cases of OM cured with medical treatment (66%) and 16 cases of persistent OM (34%) were finally diagnosed. Focal leucocyte accumulation, compatible with active OM, was observed in 14 patients. LS results were as follows: TN 31, TP 14, FN 2, FP 0. Sensitivity, specificity, accuracy, positive and negative predictive value of LS were 87.5 %, 100 %, 95.7 %, 100 % and 93.9 %, respectively. Patients with persistent OM had higher ESR and CRP compared with those with cured OM (median values 72.5mm/h and 2mg/dl vs 26mm/h and 0.28mg/dl, respectively, $p < 0.05$ for both). WBC count, although higher in patients with active OM, was within normal range in both groups. HbA1c, eGFR values, ulcer grade and severity of neuropathy (NDS) were not significantly different between the two groups. Conversely, the prevalence of PVD was higher in patients with persistent OM compared with those who were cured (81.3% vs 38.7%). **Conclusion:** Conservative treatment may be effective for the majority of patients with diabetic foot OM (66% in our study). LS is a reliable imaging modality for assessing response to medical treatment. Elevated ESR and CRP are associated with active OM. Presence of PVD is associated with failure of medical treatment and poor outcome.