Predictors of polymicrobial osteomyelitis after bone fractures

There have been very few Brazilian publications addressing risk factors for polymicrobial chronic osteomyelitis following musculoskeletal trauma. Osteomyelitis is a “difficult-to-treat” infection and poses a significant patient morbidity, especially among those with risk factors for relapsing and chronicity. Polymicrobial bone infection has been associated with complex open fractures, diabetic foot infections and other conditions and maybe associated with frequent relapses. Objective: The aim of this study was analyze which factors were associated with polymicrobial osteomyelitis occurring after musculoskeletal trauma. Methods: A prospective cohort study was conducted on a Brazilian Orthopaedic and Traumatology Service, in São José do Rio Preto, Sao Paulo. From January 2005 to December 2009, 176 patients with clinical and laboratory signs of bone infection, including tissue cultures and histopathology for osteomyelitis after bone fractures were followed for at least two years, to be able to identify a single center osteomyelitis prevalence and variables associated with polymicrobial infection. Univariate and multivariate logistic regression analysis have been applied to analyze association. Results: From 103 closed fractures, only 1.35% were infected and among 73 open fractures, 12.41% became infected. One hundred and two monomicrobial osteomyelitis served as matched-controls for 73 polymicrobial infections being studied. Working farmers patients (OR 4.39 – IC95% 1.56 to 12.36; P=0.005), open fracture type III (OR 2.77 – IC95% 1.17 to 6.56; P=0.020), need for more than one surgical debridement (OR 3.04 – IC95% 1.50 to 6.18; P=0.002) and lower limb infection (OR 3.44 – IC95% 1.31 to 9.05; P=0.012) were independently associated with polymicrobial infection. Conclusion: Follow-up of patients with risk factors for polymicrobial bone infection after trauma is important to establish appropriate therapeutic measures to avoid relapse.