

P1216

Paper Poster Session VI

Infections in neutropenia and stem cell transplantation

Two-year experience in respiratory viral infections in a university hospital cohort of haematological patients

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INTRODUCTION: Despite RV infections seem to be increasing in frequency in patients with haematological malignancies (HM), their prognosis and their relationship with the development of bacterial and fungal superinfections in these patients are not well established.

OBJECTIVE: To analyse the clinical characteristics and outcome of RV infections in a cohort of adults with HM along a two-year period in a university hospital.

MATERIALS AND METHODS: Retrospective study of all adult hematologic patients with upper and/or low respiratory tract symptoms and a RV detection between September 2012 and June 2014 at the University Hospital Vall d'Hebron, Barcelona. Diagnosis was performed by multiplex PCR in samples of nasopharyngeal swab and/or bronchoalveolar lavage. Respiratory failure was considered when baseline oxygen saturation was < 90%.

RESULTS: A total of 121 isolates in 103 patients were identified during the study period. The yearly distribution of the detected viruses is shown in table 1. Main underlying diseases were non-Hodgkin lymphoma in 29 (28%) patients, multiple myeloma in 23 (22%) patients, acute leukaemia in 18 (17%) patients and chronic lymphocytic leukaemia in 11(11%). Sixty-nine (57%) patients were under treatment, 36 (30%) in complete remission and 16 (13%) in partial remission. Forty-seven (39%) had undergone HSCT, mainly autologous (23 patients) and unrelated donor transplants (12 patients). Only 26% of the patients with *Influenza* virus infection had been vaccinated. In 110 (91%) patients, empiric antibiotic treatment had been started, although a bacterial isolation in sputum was only identified in 27 (21%) patients. Forty-five (37%) patients required hospitalization and there were sixteen (13%) cases of nosocomial infection, mainly in transplant recipients (10 out of 16). An absolute neutrophil count (ANC) under 1000 cells/mm³ was independently associated with need for hospitalization (OR 3.93, 95% CI 1.64 – 9.42). Twenty-five (21%) patients developed respiratory failure. Five (4%) patients were admitted to ICU and 2 (2%) of them required invasive ventilation. Two patients developed fungal superinfection after the VR infection. The outcome was favourable in 115 (95%) patients. Seven (6%) patients died during admission, 3 (3%) of them in relation with the viral infection. Respiratory failure was the only independent factor associated to all-cause mortality during admission (OR 30, 95% IC 3.41 – 263.61).

CONCLUSIONS: community-acquired RV infections in patients with HM are frequent and require hospitalization in more than one third of the cases, especially if the ANC is under 1000 cells/mm³. Moreover, they represent a non-negligible cause of nosocomial infection, mainly in SCT recipients. Twenty-one per cent of the patients develop respiratory failure, which is independently related to in-hospital mortality. Preventive measures, such as influenza vaccination, must be tightened in this population in order to reduce the derived morbidity and mortality.