Hematology daycare centre, a place for nosocomial transmission of Pneumocystis jirovecii

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Background: Pneumocystis jirovecii pneumonia (PCP) is a life-threatening infection in hematology. Although occasionally reported, the role of interhuman transmission of PCP when compared to reactivation is still an unresolved question, so that the recommendations of isolation of PCP patients in the hematology ward are not well evidence-based.

Material/methods: Due to an unexpected increased number of PCP episodes in our hematology ward, we explored 12 consecutive patients with PCP documented with bronchoalveolar lavage from
November 2015 to May 2016. Molecular typing of PCP was performed on DNA extracted from respiratory samples using microsatellite marker genotyping (1). The possibility of interpatient transmission was analyzed based on the patient path in our wards with putative transmission occurring when patients were present in the same unit on the same day.

**Results:** Among the 12 PCP patients, PCP genotype was not determined in 3 of them due to insufficient amounts of DNA. Among the 9 remaining patients, one genotype (Gt2), not reported in our experience of genotyping more than 300 French and European *P. jirovecii* samples, was found pure in 4 patients. Three out of the five non Gt2-patients harbored mixtures of genotypes. The 4 Gt2 patients were all from allogeneic stem cell transplant recipients. The transmission map shows that these 4 Gt2-patients had significantly more opportunities to meet (median: 6.5 times; range [4-10]) at the daycare center compared to the 8 non Gt2-patients that did meet Gt2 patients only 1 time (median 1, range [0-9]) (p=0.048).

**Conclusions:** Our study shows that 4 allogeneic stem cell transplant recipients were infected with a unique *P jirovecii* genotype – an unusual feature for PCP – and additionally with a genotype so far unreported in Europe. This clearly suggests the possibility of interhuman transmission in hematology and supports for the first time a recommendation for isolation and respiratory precautions in case of PCP in the hematology ward.