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Paper Poster Session
Update in fungal resistance and susceptibility

Does patients with fungal rhinosinusitis harbour azole-resistant A. fumigatus isolates? preliminary findings at a single French centre

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Background: Azole resistance in *Aspergillus fumigatus* (Af) is becoming an emerging problem. Environmental agricultural practices and especially the increased use of farm fungicides have been suggested to explain this situation. Environmental isolates, that harbor specific alterations (fungicide-driven), mostly TR34/L98H and TR46/Y121F/T289A, first described in European countries, have been recently identified in the Americas [1]. In recent years, several studies have been conducted to evaluate the prevalence of azole resistance in clinical samples from patients with haematological malignancies or various pulmonary diseases such as cystic fibrosis [2]. However, data are still lacking for patients with fungal rhinosinusitis a common pathological entity affecting the nose and paranasal sinuses in which *Aspergillus* species play a major role. Our aim was to evaluate the prevalence of azole-resistant isolates in a cohort of patients with fungal rhinosinusitis.

Material/methods: Fifty-nine clinical samples with a positive direct examination showing hyphae, obtained from 52 patients with fungal rhinosinusitis, and collected between 2009 and 2015, were analysed retrospectively. Basic clinical informations (age, sex, clinical form of rhinosinusitis), were collected from medical records together with results of mycological cultures. Each sample was subjected to automated DNA extraction using the AutoMag (Ademtech, France). Detection of both Af DNA, TR34 and L98H, together with an inhibition control, was ensured by multiplex PCR using the Mycogenie® *Aspergillus fumigatus* Real Time PCR kit on a Rotor-Gene Q platform (Qiagen, France).

Results: Most of the clinical samples were fungal balls (n=48, 46 patients) followed by invasive rhinosinusitis, allergic or undetermined form. For 35 out of the 52 patients (67.3%), despite a direct microscopic examination showing hyphae, allowing the diagnosis of fungal rhinosinusitis, mycological cultures remains negative. When positives, all mycological cultures grew *Aspergillus* section Fumigati (n=20, 17 patients). In all, using the real-time PCR approach, Af DNA could be detected in 51 out of the 59 samples (86.4%, 45 patients). Except one, all samples positive for Af by culture were also positive by PCR. PCR inhibition was evidenced in three samples. Regarding azole resistance, neither TR34 nor L98H was evidenced.

Conclusions: As illustrated here, *Aspergillus fumigatus* is the main species isolated from patients with fungal rhinosinusitis. Compared with mycological cultures, Mycogenie® *Aspergillus fumigatus* Real Time PCR kit provides higher performances for the detection of Af in this patients population. The low prevalence of azole resistance mediated by TR34/L98H observed in this cohort need to be confirmed on a larger collection of samples.

References

[1] Le Pape P. *et al*., Emerg Infect Dis. 2016. In press.
[2] Morio F *et al*., J Antimicrob Chemother. 2012 Aug;67(8):1870-3.