

ORIGINAL STUDY**Cobweb rhinitis – rhinitis arachnoidea.
We do have to keep an eye on this!****Ranko Mladina¹, Neven Skitarelić²**¹Department of Otolaryngology Head and Neck Surgery, University Hospital Rebro, Zagreb, Croatia²Department of Otolaryngology Head and Neck Surgery, General Hospital Zadar, Zadar, Croatia**ABSTRACT**

During the last year the authors have observed a rising number of patients having been suffering from the predominant symptom of subjective feeling of the unilateral fullness in the facial projection of the maxillary sinus and ipsilateral nasal obstruction. Surprisingly, both anterior rhinoscopy and fiberendoscopy before and after the decongestion of the nasal mucosa showed no remarkable morphologic finding in terms of any particular edema of the nasal mucosa, septal deformity or nasal polyposis. Anterior rhinomanometry and acoustic rhinometry findings were within normal ranges as well. CT scans of the paranasal sinuses showed normal appearance.

We investigated 37 patients aged 21- 59 years (average value 43 years). Seventeen patients (46%) were females and twenty (54%) were males. The average follow-up was four months.

The bacteriological samples showed negative results after 72-hours of incubation at the usual agars. However, the authors have been warned by microbiologist that colonies of moulds have been found by chance at the same agars, but only after four weeks!

In the meantime, because of the negative bacteriologic finding, nasal irrigations with sterile sea water spray have been employed and all symptoms disappeared!

Bacteriological samples from the noses of 17 healthy students have been taken representing the control group. Everything has been done in the same way as in symptomatic patients, but moulds have been found in none of them!

It seems to us, therefore, that moulds have been responsible for the onset of cobweb-like formations located in the most anterior third of the nasal cavity in our patients. The authors presume that moulds are able to produce a kind of mucosal anesthesia owing to the action of their toxins which results in the subjective patient's feeling of nasal congestion, the feeling of fullness in the projection of the nose and paranasal sinuses, while, at the same time all other diagnostic and clinical findings in rule are normal.

INTRODUCTION

During the last year the authors have observed numerous patients showing an unusual clinical picture in their nasal cavities followed by subjective feeling of the unilateral fullness in the facial projection of the maxillary sinus and ipsilateral nasal obstruction. Surprisingly, both anterior rhinoscopy and fiberendoscopy, before and after the decongestion of nasal mucosa, showed no remarkable morphologic finding in terms of any particular edema of the nasal mucosa, septal deformity or nasal polyposis. Anterior rhinomanometry and acoustic rhinometry findings were within normal ranges as well. CT scans of the paranasal sinuses showed normal appearance.

Still, there was one unusual clinical finding in the

nose of all of our patients: transparent, very gracile mucous filaments that extended between the medial surfaces of the anterior thirds of the inferior turbinate on one side and septal mucosa of the corresponding region at the other side, resembling a cobweb (Figure 1).

PATIENTS AND METHODS

During the 12-months period (March 2010-March 2011) we investigated 37 patients aged 21- 59 years old (average 43 years). Seventeen patients (46%) were females and twenty (54%) were males. An average follow-up was four months.

In all 37 consecutive patients the cotton swabs samples have been taken from the very center of their

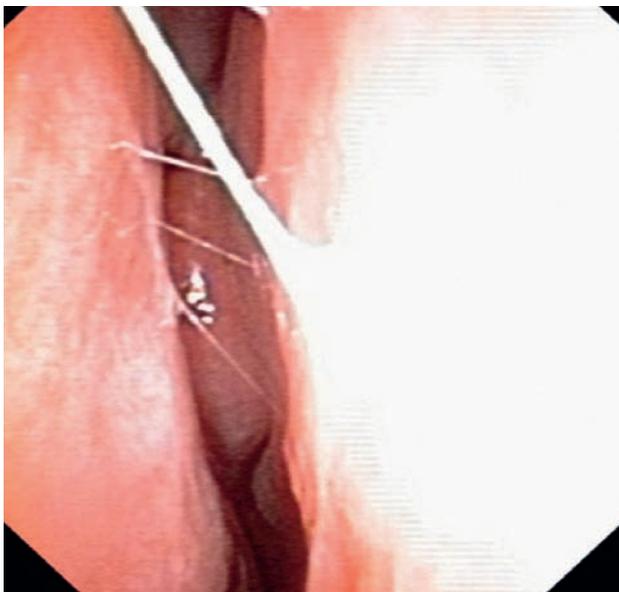


Figure 1 Right nasal cavity. Obvious signs of cobweb rhinitis.



Figure 2 Materials for mycological examination were planted on the Sabouraud agar 2% (BBL Becton Dickinson and Company, New York, USA).

cobweb-like nasal formations for microbiological analysis.

Materials were planted on the Sabouraud agar (Figure 2) (BBL Becton Dickinson and Company, New York, USA) modified 2% and the Malt extract broth with gentamicine and colistine within 15 minutes at the latest. Samples were cultivated at 28°C during four weeks. Identification was based on the microscopic and macroscopic characteristics of the mold colonies growing on the plates. The microscopic study involved direct examination of a small portion of each colony after addition of lactophenol cotton blue. Colonies in which no reproductive structure were identified and were also examined in slide cultures.

The control group consisted of 17 healthy students without any symptoms and with normal anterior rhinoscopy and fiberoendoscopy findings. The students were 24- 27 years of age (average value 26 years). Eight students (47%) were females and nine (53%) were males. In all of them we took bacteriological samples from the noses in the same way as we did in real patients. Diagnostic protocol has been done in the same way as well.

RESULTS

In 31 out of 37 patients (84%) with clinical picture of cobweb-like secretions in the anterior part of the nose, the moulds of *Fusarium* (Figure 3) and *Paecilomyces* specium have been isolated, but only after four weeks of incubation. On the other hand, bacteria were not

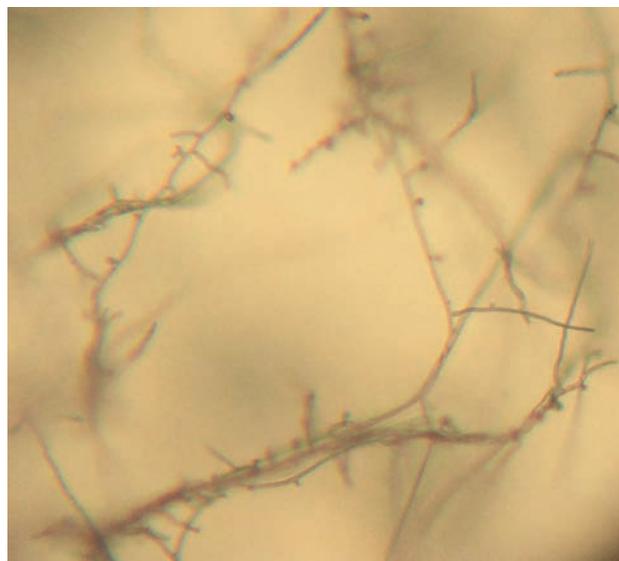


Figure 2 Materials for mycological examination were planted on the Sabouraud agar 2% (BBL Becton Dickinson and Company, New York, USA).

found in none of the samples within 72 hours of incubation and the finding has been considered normal.

The hypertonic sea water solutions were puffed into both nasal cavities several times a day for 7 up to 10 days. The patient's symptoms and the cobweb-like formations simply disappeared. The control bacteriological samples were negative both after 72 hours of incubation and after four weeks of expecting any colonies of moulds to grow up on the agars. The remissions are still lasting and the patients are doing well.

In the control group of 17 healthy students we took the bacteriological samples from the noses. All

microbiologic precedures have been done in the same way, but moulds have been found in none of them even after four weeks of incubation!

DISCUSSION

The genus *Fusarium* and *Paecilomyces* are common filamentous fungi. They are known as soil saprophytes and important plant pathogens. These organisms cause a broad spectrum of human disease, including mycotoxicosis and infections which can be locally invasive or disseminated¹.

Most of moulds species are harmless but some of them produce typical toxins, so called mycotoxins.

The main toxins produced by the *Fusarium* species are fumonisins and trichothecenes, whereas *Paecilomyces* produce so called paecilotoxins.

Paecilomyces species are rarely pathogenic in humans, and when they occur in adult immunocompetent patient it usually goes for foreign body (implants, for instance). Although *Paecilomyces* species are uncommon pathogens, the incidence of infections with this mould in immunocompetent hosts is increasing². *Paecilomyces lilacinus* and *Paecilomyces variotii* are the two species associated most frequently with human disease². *Paecilomyces* species have been also considered ubiquitous saprophytic fungi, like *Fusarium* species.

Regarding humans, some species may cause a range of opportunistic infections. In those with normal immune systems, fusarial infections most frequently occur in the nails (onychomycosis) or in some patients in the cornea (keratomycosis)^{3,4}. Nasal fusarial symptomatic infection, to the best of our knowledge, has not yet been described in rhinologic literature. According to our clinical observations, the most frequent location of these infections is the anterior third of the nasal cavity.

Our patients' complaints (subjective feeling of nasal congestion, feeling of fullness in the projection of paranasal sinuses etc.) perhaps could be explained by the fact that *Fusarium* and *Paecilomyces* species produce mycotoxins. These mycotoxins can suppress humoral and cellular immunity, and cause tissue breakdown⁵. Based on these facts, but still hypothetically, the mycotoxins could affect the trigeminal nerve branches in the nasal mucosa, blocking their sensitive function thus producing the feeling of nasal stuffiness in the same way as local superficial anesthetics do. The

same goes for the feeling of nasal obstruction in the patient suffering from atrophic rhinitis (ozena), even after the removal of all crusts that are usually found in the nasal cavities of these patients. The branches of trigeminal nerve have been destructed together with the sub-epithelial mucosal layers!

Because of typical clinical picture resembling very much a cobweb formation we called this clinical entity a cobweb rhinitis or, in Latin language, rhinitis arachnoidea.

CONCLUSION

An unusual clinical picture showing cobweb-like mucous filament in the anterior third of the nasal cavities, stretching between the medial surface of the inferior turbinate and the nasal septum, have been observed in the last year. The patients suffer from subjective feeling of nasal obstruction and / or fullness in the projection of the maxillary sinus. Objective diagnostic tools do not show anything particular. Bacteriological findings remain negative as well. The moulds of *Fusarium* and *Paecilomyces* spec. can be identified, but only after one to four weeks of incubation.

It seems that these microbes, which have been considered normal nasal flora until nowadays, became more aggressive and thus clinically important. This finding suggests more attention when seeing this type of clinical picture followed by typical symptoms.

CONFLICT OF INTEREST STATEMENT

We declare that there is not any potential conflict of interest or any sources of funding.

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