

# Biofilm w przebiegu przewlekłego zapalenia zatok przynosowych. Badania morfologiczne w SEM

Biofilm from patients with chronic rhinosinusitis. Morphological SEM studies

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## Summary

**Introduction.** Bacterial biofilm is a three-dimensional structure made of aggregates of bacterial cells (microcolonies) and the extra cellular matrix released by them, adhering to organic and inorganic surfaces. It is estimated that 99% of all bacteria exist in biofilms, and only 1% live in a free-floating or planktonic state at any given time. The aim of the study was to demonstrate biofilms in mucosal specimens of patients undergoing endoscopic sinus surgery for chronic rhinosinusitis and co-occurrence of such illnesses as nasal polyps, bronchial asthma, NSAIDs allergy, and aspirin-induced asthma. **Material and methods.** A prospective study of 25 patients suffering from chronic rhinosinusitis. All patients underwent completed an otolaryngological examination and paranasal sinus CT scans. Endoscopic surgery of nasal sinuses (ESS) was performed in all patients. The mucous membrane samples were taken from the inside of the sinus and concha bullosa. They were prepared and examined with a scanning electron microscope (SEM). The images were then compared with the available database of the biofilm images. **Results.** Using SEM morphologic criteria, the biofilms were identified in the studied material in nineteen patients (83%). In four patients with chronic rhinosinusitis, no biofilms were found on the samples taken. A bacteriological examination of smears from inside of the sinus, revealed the presence of various types of bacteria. In two patients no bacteria was found in the smears. **Conclusions.** It is supposed that bacterial biofilms perform an essential role in the pathogenesis of chronic sinusitis. One may speculate that, the presence of biofilms in patients with chronic rhinosinusitis could induce the co-occurrence of such illnesses as nasal polyps, bronchial asthma, aspirin-induced asthma or a NSAIDs allergy. In order to evaluate better the role of biofilms in chronic rhinosinusitis, it seems justified to extend the research to a larger group of patients and a control group.