

Coagulase-negative staphylococci in normal and chronically inflamed conjunctiva

Abstract:

This study examines the prevalence of coagulase-negative *Staphylococcus* species in normal and mildly inflamed conjunctiva, their sensitivity to antibiotics, and their relationship to the remaining flora. **PATIENTS AND METHODS:** In 99 patients including 9 HIV-positives in an early stage of the infection, 100 conjunctival swabs were taken and microbiologically investigated for bacteria and fungi. Thirty-four were from healthy eyes. 40 were from patients with chronic ($n = 28$) and unspecific ($n = 12$) conjunctivitis, 17 were from patients with a variety of outer inflammatory ocular conditions, and 9 were from the HIV group from uninfected ($n = 6$) and infected ($n = 3$) conjunctivae. Samples from each patient were collected with three moistened cotton swabs and directly inoculated onto five different agars, followed by immersion into three specific culture broths. Staphylococci were identified species-wise, the other microorganisms genus-wise. Sensitivity to a broad spectrum of antibiotics was determined by agar diffusion tests. **OUTCOME:** Staphylococci were found in 89%, which was the highest prevalence genus-wise. Of those, coagulase-negative species accounted for 86%, while coagulase-positive *Staphylococcus aureus* was isolated in 12% of all swabs. In the 86 smears positive for coagulase-negative staphylococci, 151 different strains were isolated. In these strains, resistance to the 13 tested antibiotics varied from 0% for vancomycin to 66% for penicillin. Strains which were isolated from patients with chronic conjunctivitis showed a greater range of resistance than those from normal flora, with significant levels for ciprofloxacin, gentamycin and kanamycin (Mann-Whitney) U-test: $P < 0.05$). All except six strains of staphylococci were identified strains represented ten species, of which *Staphylococcus epidermidis* was most prevalent (74%), but only made up 70% of all isolated strains of the coagulase-negative staphylococci. *Staphylococcus aureus* and gram-negative bacteria were found significantly more commonly in patients which chronic conjunctivitis than in healthy eyes, while coagulase-negative species of the Micrococcaceae family were significantly more prevalent in the healthy than in the chronically inflamed conjunctiva (chi-square: $P < 0.05$). **CONCLUSION:** The conjunctiva can simultaneously host several stems of coagulase-negative staphylococci, which differ in regard to species and resistance to antibiotics. This variety might indicate a microbiological balance of the conjunctiva and be reduced in chronic inflammatory conditions. In patients with chronic conjunctivitis the risk for multiresistant coagulase-negative staphylococci is increased.