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ePoster Viewing

Molecular typing of staphylococci

**POPULATION DYNAMICS OF STAPHYLOCOCCUS AUREUS RECOVERED FROM THE AIRWAYS OF CYSTIC FIBROSIS PATIENTS DURING A LONGITUDINAL PROSPECTIVE OBSERVATIONAL MULTICENTER STUDY**

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**Introduction:** *Staphylococcus aureus* is not only the first but also one of the most prevalent and persistent pathogens cultured from the airways of CF-patients.

**Objectives:** The aim of this prospective longitudinal multicenter study was to dissect colonization from infection in patients with *S. aureus* cultured from the airways by determining a variety of host- and pathogen specific parameters.

**Methods:** Inclusion criteria: >6 years, persistent *S. aureus* cultures from airway specimens within the year before recruitment. Specimens were processed at the study laboratory in Muenster. *S. aureus* isolates from primary cultures were distinguished by phenotypical appearance (hemolysis, pigmentation, size). All isolates were analyzed by *spa* sequence typing.

**Results:** Data were collected for 195 patients from 16 centers in Germany and 1 center in Austria. 75 female (38.5%) with a mean age of 15.7 years (range 5 to 41 y) were recruited; 49% patients were  $\Delta$ F508 homozygous. Data from 1359 visits were evaluated (mean visits/ patient: 7). 1381 of 1897 specimen (73%) were positive for *S. aureus*. 3963 *S. aureus* isolates were recovered from nasal and throat swabs, sputa or nasal lavage. The isolates could be assigned to 269 different *spa* types. During the observation period up to 12 different *S. aureus* clones were isolated from individual patients. 174 clones (65%) were unique clones present in individual patients only, while the 4 most prevalent clones (*spa* types t084, t091, t015, t008) were present in 16, 14, 12 and 10 centers and recovered from the airways of 99 patients (52%). A single persistent clone (present at least at 4 visits) was isolated from 108 patients, 2 persistent clones from 31 patients, 3 from 5, and 4 clones from 1 patient. In most patients other non-persistent clones were present mostly once or 2 or 3 times. In 78 patients isolates with mutations of *spa* types occurred (deletion, duplication or point mutations of repeats).

**Conclusions:** The results of our study revealed that most patients were infected by their individual clone, while 4 clones, which all belong to the 15 most prevalent clones reported on the *spa* server, were present in many CF centers and in many patients. Such distribution indicates that CF patients acquire not only special but also clones, which are prevalent in the community. In most patients one clone persisted, while several other clones could be isolates sporadically. Most clones with mutations in the *spa* repeat region were only isolated once indicating that such mutations were not superior compared to the original clone.