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论著

口腔综合治疗台水路生物膜观察与消毒干预

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摘要：

目的评价口腔综合治疗台独立水源水路经次氯酸钠消毒前、后生物膜结构和菌落数情况。方法选择10台独立水源口腔综合治疗台，采集经525 mg/L次氯酸钠消毒水路前、后治疗台工作端水管内壁生物膜，计算总菌落数，并应用激光共聚焦扫描显微镜和扫描电镜观察生物膜结构。结果口腔综合治疗台水路消毒前、后生物膜菌落数几何均值分别为1.7×103 CFU/cm2和0 CFU/cm2，两者比较，差异有显著性（t=12.03，P=0.02）。激光共聚焦扫描显微镜及扫描电镜观察结果显示，消毒前口腔综合治疗台水路内壁存在生物膜，呈特征性结构，杆菌与球菌分布于基质中；消毒后，其生物膜结构受到一定程度破坏，但基质仍然存在。结论口腔综合治疗台水路存在微生物污染，其内壁有生物膜，并含有高浓度细菌，存在引起医患医院感染的潜在风险。525 mg/L的次氯酸钠消毒剂对口腔综合治疗台水路具有较好的消毒效果，可常规应用于临床独立水源口腔综合治疗台水路的消毒处理。

关键词： 口腔综合治疗台水路；生物膜；条件致病菌；次氯酸钠；消毒；感染控制；医院感染

Biofilms in dental unit waterlines and disinfection intervention

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Abstract:

ObjectiveTo evaluate the difference in the configuration and quantity of biofilms in dental unit water lines (DUWL) before and after disinfected with sodium hypochlorite solution. MethodsThe samples of biofilms from DUWL supplied with 10 separate water sources were collected and the microorganisms were quantified after incubated for 48h, and the configuration of biofilms were observed with confocal laser scanning microscope (CLSM) and scanning electronic microscope (SEM). The sodium hypochlorite at concentration of 525 mg/L was used for disinfection of DUWL. ResultsThe number of bacteria in biofilms at the baseline was 1.7×103CFU/cm2 before disinfection and 0 CFU/cm2 after disinfection with sodium hypochlorite solution, there was significant difference between the two (t=12.03,P=0.02) . CLSM and SEM showed that before disinfection, biofilm existed in the inner wall of DUWL,and bacilli and cocci distributed in the matrix; after disinfection, the configuration of biofilms, particularly fence like structures were destroyed, but matrix was still existed. ConclusionDUWL has been contaminated heavily with a number of microbes, and the inner walls of DUWL is covered with biofilm, which is composed of millions of bacteria. The high concentration of microbes in DUWL is bringing the high risk of cross infection to both dental professionals and patients. Sodium hypochlorite at the concentration of 525 mg/L may be used as a disinfection solution for DUWL with separate water source.

Keywords: dental unit waterlines biofilm opportunistic pathogen sodium hypochlorite disinfection infection control; nosocomial infection

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