HSR (LONDON),
HOUGHTON STREET REVIEW JOURNAL
ISSN: 2058-5519|Impact factor-15.9
http://houghtonstreetreview.com/index.php/hsr

UDC: 616.314.17-008.1:579.61

MICROBIOCENOSIS OF THE ORAL CAVITY AND THE ROLE OF RED COMPLEX MICROORGANISMS IN THE DEVELOPMENT OF PERIODONTAL DISEASES AMONG WORKERS OF METAL PROCESSING ENTERPRISES

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Annotation: Periodontal diseases remain one of the most widespread dental pathologies among workers employed in hazardous industrial environments. The aim of this study was to assess the composition of periodontal microflora and determine the prevalence of red complex microorganisms among workers of metal processing enterprises. The study included 120 workers diagnosed with chronic generalized periodontitis and 30 healthy individuals. Polymerase chain reaction (PCR) was used to identify Porphyromonas gingivalis, Tannerella forsythia, and Treponema denticola. The findings demonstrated a significantly higher prevalence of red complex microorganisms in the main group compared with controls. The obtained data indicate that occupational exposure to industrial hazards contributes to disturbances in oral microbiocenosis and increases the risk of periodontal inflammation.

Keywords: red complex, periodontal diseases, oral microbiocenosis.

Аннотация: Тадқиқотда металлга ишлов бериш корхоналари ишчиларининг оғиз бўшлиғи микробиоценози ўрганилди. Сурункали генерализацияланган пародонтит билан касалланган беморларда Porphyromonas gingivalis, Tannerella forsythia ва Treponema denticola каби қизил комплекс микроорганизмларининг юқори учраш частотаси аниқланди. Натижалар ишлаб чиқариш омиллари оғиз бўшлиғи микрофлорасида дисбиотик ўзгаришларни келтириб чиқаришини кўрсатди.

Калит сўзлар: қизил комплекс, пародонтит, микробиоценоз.

Аннотация. Изучены особенности микробиоценоза полости рта у работников металлообрабатывающих предприятий. Установлена высокая частота выявления микроорганизмов красного комплекса (Porphyromonas gingivalis, Tannerella forsythia, Treponema denticola) у пациентов с хроническим генерализованным пародонтитом. Полученные результаты свидетельствуют о значительной роли производственных факторов в развитии дисбиотических нарушений и воспалительных заболеваний пародонта.

Ключевые слова: красный комплекс, пародонтит, микробиоценоз.

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Introduction

The oral cavity contains a complex microbial ecosystem that plays a crucial role in maintaining oral health. Under the influence of adverse environmental and occupational factors, the balance of oral microflora may be disrupted, resulting in the development of inflammatory periodontal diseases. Workers of metal processing enterprises are continuously exposed to industrial dust, heavy metals, vibration, and chemical agents that may adversely affect oral tissues and local immunity.

Special attention is paid to microorganisms of the red complex, including Porphyromonas gingivalis, Tannerella forsythia, and Treponema denticola, which are considered key etiological agents of chronic periodontitis.

Materials and Methods

The study involved 120 workers from metal processing enterprises aged 18-44 years with chronic generalized periodontitis and 30 healthy individuals forming the control group. Clinical examination included assessment of oral hygiene status and periodontal indices.Samples from periodontal pockets were collected and analyzed using PCR techniques to detect red complex microorganisms. Statistical analysis was performed using standard biomedical methods.

Results and Discussion

The prevalence of Porphyromonas gingivalis among workers reached 72.5%, Tannerella forsythia was identified in 63.7%, and Treponema denticola in 56.2% of examined subjects. In the control group, these microorganisms were detected significantly less frequently.

The severity of periodontal tissue destruction was directly associated with the concentration of red complex bacteria. Occupational exposure to heavy metals and industrial dust promoted dysbiotic changes in oral microbiocenosis, facilitating colonization by pathogenic microorganisms.

These findings confirm the important role of red complex bacteria in the pathogenesis of periodontal diseases among industrial workers and highlight the necessity of microbiological monitoring and preventive measures.

Conclusion

Workers of metal processing enterprises demonstrate significant disturbances in oral microbiocenosis characterized by increased colonization with red complex microorganisms. Detection of these pathogens may serve as an informative diagnostic marker for early identification and prevention of periodontal diseases in industrial populations.

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