REVIEW

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Regarding the dissertation titled: "The Relationship between Periodontal Status and Periodontal Infection with Coronary Heart Disease", submitted for the award of the educational and scientific degree PhD by Dr. Atanaska Atanasova Nyagolova, PhD student at the Department of Periodontology and Dental Implantology, Faculty of Dental Medicine, Medical University – Varna.

Scientific supervisor: Prof. Stefan Vasilev Peev, DSc

I. General Characteristics and Relevance of the Topic

The topic of Dr. Atanaska Nyagolova's dissertation is highly relevant, as it addresses one of the most debated issues in contemporary scientific literature – the relationship between localized chronic inflammatory processes and systemic diseases. In particular, the work explores the potential connection between periodontal status and the severity of coronary artery disease (CAD). The analysis of the pathogenesis of atherosclerosis in the context of chronic oral infections such as periodontitis is especially important given the rising morbidity and mortality from cardiovascular diseases both globally and nationally. The author approaches the topic with the required scientific depth, combining dental-medical, microbiological, and cardiological perspectives.

II. Structure and Volume of the Dissertation

The dissertation consists of 173 pages, including 44 figures, 29 tables, and 5 appendices. The 391 cited references reflect a thorough familiarity with current scientific knowledge in the field, with 388 in Latin script—an indicator of active engagement with the international scientific community.

The structure fully adheres to academic standards and includes:

- Introduction
- Aims and Objectives
- Materials and Methods
- Results
- Discussion
- Conclusion, Findings, and Contribution

The aim, logically derived from the detailed literature review, is: To investigate the relationship between periodontal status, the microbiological profile of periodontal infection, and the presence and severity of coronary artery disease. The four formulated **objectives** fully correspond to the topic and

content of the dissertation. Each task is sufficiently elaborated with original research, ensuring reliable results and objective conclusions.

The abstract fully reflects the content of the dissertation and complies with academic requirements. The included tables, figures, and diagrams provide adequate information about the conducted research and obtained results.

III. Research Methodology

The study is cross-sectional, clinical, and microbiological, conducted among 199 patients undergoing selective coronary angiography at the Second Cardiology Clinic, University Hospital "St. Marina," Medical University – Varna.

The scientific approach includes:

- Clinical assessment of periodontal status (BoP, PI, PPD, CAL, furcations).
- Molecular-biological analysis using PET test to detect P. gingivalis, T. denticola, and A. actinomycetemcomitans.
- Cardiological evaluation using SYNTAX Score I – an objective scale of CAD severity.
- Statistical analysis with Jamovi software, applying Spearman correlation analysis.

This multidisciplinary approach is well justified and consistent, enabling the identification of reliable associations between dental-medical and cardiological health.

IV. Implementation of the Main Objectives and Results

The **results** are thoroughly analyzed, clearly presented with graphs, and statistically substantiated. The main findings include:

- Over 92% of patients had periodontitis, 54% with severe forms.

- P. gingivalis and T. denticola were isolated in the majority of samples, showing positive correlation with inflammation and tissue destruction indicators.

- Patients with higher microbial load had higher SYNTAX Scores, suggesting an association between the severity of periodontitis and the extent of coronary pathology.

- A greater number of isolated pathogens correlated with more pronounced clinical attachment loss (CAL), a key indicator of periodontal destruction.

- A significant synergistic effect was observed between P. gingivalis and T. denticola, with their co-presence leading to more severe clinical manifestations.

The obtained **results** are reliable and well interpreted for all tasks.

V. Discussion and Interpretation

The discussion is scientifically well-grounded, with extensive comparative analysis against findings from other authors. The candidate not only confirms existing hypotheses in the literature but also proposes original interpretations based on her own clinical material.

A particularly valuable aspect is the recognition of possible shared comorbidity between periodontitis and CAD, while also emphasizing the need for longitudinal studies to establish a causal relationship.

VI. Scientific and Practical Contributions

Original contributions:

- Established a relationship between microbiological periodontal profile and severity of coronary pathology.
- Proposed a novel interpretation of the SYNTAX Score in the context of oral health. Introduced PET test as a diagnostic tool with potential for inclusion in cardiological screening.
- Developed an algorithm for clinical interpretation of results in combined diagnostics of periodontitis and CAD.

Confirmatory contributions:

- Confirmed frequent co-isolation of P. gingivalis and T. denticola in severe cases.
- Supported the concept of local inflammation with systemic effects.
- Provided data confirming that periodontal infection may worsen cardiovascular prognosis.

VII. Conclusion and Evaluation

The dissertation of Dr. Atanaska Atanasova Nyagolova, titled “The Relationship between Periodontal Status and Periodontal Infection with Coronary Heart Disease,” is an original, independent, and in-depth scientific study of high theoretical and practical value, fully meeting the criteria for awarding the PhD degree.

I give my overall **positive** evaluation of the dissertation and will confidently vote **“YES”** for awarding the educational and scientific degree **PhD** to Dr. Atanaska Atanasova Nyagolova.

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Sofia

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