

To the Chairman of the Scientific Jury

determined by order No. R-109-410/26.10.2022

of the Rector of Medical University – Varna city

STANDPOIN

by Prof. Anton Yordanov Dzhorov, DMD, PhD, DSc

(Acibadem city clinic – city of Sofia, Multispecialty Hospital for Active Treatment "Tokuda"
EAD – city of Sofia)

Specialties “General dentistry”, “Surgical dentistry” and “Maxillofacial surgery”

About: a dissertation paper for the award of educational and scientific degree "Doctor" in programme of Surgery, in the professional direction 7.1. "Medicine", Department of General and operative surgery, Faculty of Medicine, Medical University – Varna city

Subject: "Procalcitonin and delta neutrophil index levels in the surgery of head and neck inflammatory diseases”

Author: Yanko Georgiev Yankov, MD

Scientific Directors: Prof. Nikola Yordanov Kolev, MD, PhD, DSc and Assoc. Prof. Yana Dimitrova Bocheva, MD, PhD

I. Brief biographical data and career development of Yanko Yankov, MD

Yanko Yankov, MD was born on 17.04.1989 in the town of Shumen, he graduated from the Medical University "Prof. Dr. Paraskev Stoyanov" - city of Varna with excellent (6.00) success and was awarded the "Golden Hippocrates" award in 2014. From 2015 to the present, he has been working as a medical doctor in the Clinic of Maxillofacial Surgery at University

General Hospital (UGH) "Sveta Marina" – Varna city. In the period February - October 2019, he worked as a part-time assistant in Oral and Maxillofacial Surgery at the Department of Oral and maxillofacial surgery at the Faculty of Dental Medicine and at the Department of General and operative surgery at the Faculty of Medicine of Medicine University "Prof. Dr. Paraskev Stoyanov" – city of Varna. In 2019, after winning a competition, he was appointed full-time assistant in Maxillofacial surgery at the Department of General and operative surgery in the same university and in July 2020, he acquired a specialty in Maxillofacial surgery.

II. Actuality of the topic and the set goal

- The dissertation contains a total of 104 pages and is illustrated with 49 graphics, 43 tables and 2 diagrams. The bibliographic reference includes 135 literary sources, 2 of them in Cyrillic and 133 in Latin alphabet.
- Inflammatory diseases of the face and neck are common diseases. Their complications sometimes have protracted and severe courses. These diseases are ones of that burden the health care system a lot. The known laboratory indicators such as the value of leukocytes, neutrophils, ESR and CRP not always increase their absolute value in the course of the infectious process. They can be reliable and definitive markers for the diagnosis, treatment, follow-up and prediction of the outcome of inflammatory diseases. PCT is one of the most promising biomarkers of inflammation in the diagnosis of infectious diseases. Its increased values in the blood plasma indicate the degree of bacterial inflammation and appear to be an earlier marker for the diagnosis of inflammatory diseases than the classic indicators of inflammation. It has been defined as an early marker of inflammation. This detects the development of the inflammatory process even before the values of WBC, neutrophils and CRP have increased.
- In order to establish the clinical applicability of PCT and DNI as indicators of inflammation, it is necessary to evaluate their diagnostic reliability and the effectiveness of their methodologically derived cut-off values in the studied patients with head and neck abscesses of odontogenic and non-odontogenic origin. Yanko Yankov, MD has made a thorough critical analysis of the literature by formulating the unsolved problems on the subject. This gives him the basis for the

present study. The topic of the dissertation examines a current and important problem for medical science and practice. The goal is clearly stated and the tasks are defined correctly.

III. Materials and methods

81 patients with head and neck abscesses were studied, 50 of them with odontogenic and 31 with non-odontogenic origin. PCT, CRP, WBC and Neutr values were examined and DNI was calculated. One 80-year-old female patient with non-odontogenic abscess was excluded from the study. The cause is a newly discovered oncohematological disease. The remaining 80 patients were divided into two groups – 50 with odontogenic abscesses and 30 with non-odontogenic abscesses. As a control group, 51 healthy individuals (30 men and 21 women) of age and gender corresponding to the study group were used. The study does not include patients with anamnestic data on diseases and conditions in which false-positive results are possible. The signs to watch for are:

- gender differences regarding the studied markers PCT, DNI, CRP, WBC and neutrophils in the studied population;
- correlations between PCT, DNI, CRP, WBC and neutrophils in the studied group of patients with head and neck abscesses, in the subgroups with odontogenic and non-odontogenic abscesses and in the control group of healthy people;
- cut-off diagnostic and reference values of PCT and DNI in the studied groups of patients with odontogenic and non-odontogenic abscesses of the head and neck;
- sensitivity, specificity and predictability of PCT, DNI, CRP, WBC and neutrophils.

Column graphics with clusters, pie charts with individual segments in 3D and SmartArt graphics of the software program "Microsoft Word" (2010) were used to present the results. The following statistical methods were applied for the purposes of the study:

- frequency tables with absolute numbers and percentages, arithmetic mean, median, standard deviation, minimum and maximum values are used. Graphically, mean measurements are presented with box-plot graphics and categorical data with bar graphics. "Jamovi software 2.2.0" is used to visualize the obtained data.
- in the intergroup comparison of the differences in the studied indicators between

the individual studied groups variation analysis "ANOVA" is used.

- for the intragroup comparison of the differences between the studied indicators, a parametric "Independent T-test" is used.
- ROC curves were used to determine the predictive accuracy of study.
- Correlation analysis was used to study the dependencies between the studied clinical indicators and to establish the strength of their influence on each other.

IV. Results and discussion

The results are comprehensively described and analyzed. The dissertation concludes with conclusions and generalizations made from the study.

V. Contributions

Five contributions are outlined in the dissertation. I consider the following to be the most important of them:

1. For the first time in Bulgaria, PCT and DNI are used as markers in the management of odontogenic and non-odontogenic head and neck abscesses;
2. For the first time in Bulgaria, a correlation between PCT, DNI, CRP, WBC and neutrophils as markers of inflammation in odontogenic and non-odontogenic head and neck abscesses was made;
3. Determination and follow-up of PCT and DNI in routine practice in patients suspected of odontogenic and non-odontogenic head and neck abscesses may lead to earlier diagnosis and more precise treatment of these diseases.

VI. Characterization and evaluation of the dissertation work

The thesis submitted to me for review by Yanko Georgiev Yankov, MD with a topic "Procalcitonin and delta neutrophil index levels in the surgery of head and neck inflammatory diseases" I take it as complete. It was prepared in accordance with the requirements of The law on higher education, RSASR, the regulations for the application of RSASR and the rules of the Medical University – Varna city.

The clinical material and studies made are of interest to medical science and practice. I consider the researches and observations of the patients and the resulting conclusions and contributions in the dissertation to be the personal work of the author. The abstract has been prepared according to the requirements of RSASR and the regulatory framework of Medical University – Varna city. It reflects the content of the dissertation. In connection with it Yanko Yankov MD presents two articles and two reports, in which he is the first author.

VII. Conclusion

Everything said above gives me reason to give a positive assessment of the dissertation work and I will vote “YES” for the award of a scientific and educational degree “Doctor” in programme of Surgery of Yanko Georgiev Yankov, MD.

City of Sofia

21.11.2022

Reviewer:

Prof. Anton Yordanov Dzhorov, DMD, PhD, DSc

