

To the Scientific Jury, determined by Order No. R 109-406/20.11.2024.

To the Rector of the Medical University of Varna "prof. Dr. Paraskev Stoyanov".

Review

by

Prof. Snezhana Veselinova Murgova, MD

Head of the department "Ocular, ENT diseases and FMS" MU Pleven

Regarding the defense of a dissertation work for the award of an educational and scientific degree
"Doctor"

Of Dr. Neli Krasteva Nikolova-Petkova

From the Department of "Ocular Diseases and Vision Sciences" at the Faculty of Medicine of the
Medical University "prof. Dr. Paraskev Stoyanov" - Varna

on the subject:

"Anterior Ocular Surface Biologic Therapy, A Step Towards Personalized Ophthalmology"

with scientific supervisor: cor. member Prof. Dr. Hristina Grupcheva, MD

Brief biographical data

Dr. Neli Krasteva Nikolova-Petkova was born on 08/04/1986 in the city of Kubrat. In 2011, she graduated from the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna. In 2017 acquires a specialty in "Eye Diseases".

She worked in the pharmaceutical sector as a medical representative (2012-2014) at Unipharma EOOD. She has been working as a resident doctor in SBOBAL-Varna since 2016. From 2023 is a full-time lecturer at the Department of Optometry and Occupational Diseases at the Medical University of Varna.

Her scientific interests are focused on the anterior segment of the eye, treatment and follow-up of patients with glaucoma, aesthetic surgery.

Dr. Nikolova continuously improves her qualifications by annually attending courses and conferences, for which she has submitted a detailed list. Among them are "Aesthetic facial surgery", 2016, "Eye transplantation", 2017, "Course on fitting multifocal lenses", 2019, "Modern methods for researching structural changes in the retina (FAG and OCT)", 2019, "Lasers in ophthalmology - treatment of eye diseases", 2019, "Vitreous surgery and retina", 2020, "Ultrasound diagnostics in ophthalmology", 2020, "Amniotic membrane", 2020, "Intravitreal drug administration", 2020, "Strabology", 2020.

She is a member of the Bulgarian Medical Union and the Bulgarian Society of Ophthalmology. She speaks English and has very good computer literacy.

Relevance of the problem

The dissertation work of Dr. Neli Nikolova is dedicated to an important and particularly relevant topic - anterior ocular surface. It is of extreme importance to preserve the anatomical and functional integrity of the eye, to maintain patient comfort and to improve the results of all surgical interventions of the anterior segment of the eye. Many structures take part in it, which are interconnected through various mechanisms, and affecting one of them leads to a violation of the integrity of this complex system. Damage to the anterior segment of the eye is a group of diseases that have different etiology, clinical picture and accordingly require an individual approach in treatment.

Structure of the scientific work

Dr. Nikolova's dissertation summarizes the practical experience of the University Specialized Hospital for Eye Diseases for Active Treatment in Varna for a period of 4 years in the field of biological therapy of the anterior ocular surface. The scientific work is written on 211 pages, 12 tables and 52 figures, it complies with modern requirements, but it is not well balanced. The work includes the following sections: introduction – 3 pages, literature review 93 pages, goal and tasks – 1 page, methodology – 14 pages, results 40 pages, discussion 40 pages, conclusions 2 pages, conclusion 2 pages, contributions – 1 p. The bibliographic reference includes 176 titles in English and none in Bulgarian.

The literature review is divided into 4 sections. It presents in depth and more than necessary the anatomy of the anterior ocular surface. The mechanism, epidemiology, and various causes of persistent epithelial defects are discussed in detail. All methods for diagnosing corneal defects presented since their historical development are summarized. Different types of dyes, methods of their application, clinical advantages of staining grading scales are discussed. Attention is paid to modern technologies for the diagnosis of epithelial defects - confocal microscopy and anterior segment OCT. The therapeutic approach in the treatment of corneal defects is also comprehensively presented. It is noteworthy that the information in the literature review is rather retold from the literary sources, rather than analyzed. Based on the literature review, 5 conclusions were drawn.

The aim of the dissertation is: to carry out a detailed analysis of a wide range of eye diseases characterized by persistent epithelial defects and to evaluate the clinical effectiveness of the applied therapeutic approaches. For the realization of these goals, the dissertation student has set herself 6 well-formulated tasks.

In order to achieve the goals and objectives of the study, a wide range of scientific and practical methods were used, which are described in detail in the methodology chapter of the dissertation. Included were 102 patients treated in hospital and pre-hospital care of USBOBAL - Varna, for a period of 4 years. (from 2017 to 2021)

The inclusion and exclusion criteria of the participants are clearly defined.

The visual acuity of all patients was examined, the subjective complaints of irritation, redness, pain, sensation of a foreign body were assessed - based on a questionnaire.

For the objective assessment of the anterior eye surface, modern methods are used - biomicroscopy, anterior segment optical coherence tomography and confocal microscopy.

According to the therapeutic approach, Dr. Nikolova divides patients into 4 groups:

Group I - Therapeutic contact lens (TCL)

Group II- TCL+Autologous serum drops (ASD)

Group III - Amniotic membrane (AM)+TCL+ASD

Group IIII - AM+ASD+TCL+Cross-linking - In the presence of infiltrate

All this provides an exceptional accuracy and precision of the obtained data and increases the scientific value of the development. Modern statistical methods were used to analyze the obtained results.

The results are presented in several sections and 102 patients with persistent epithelial defects were prospectively analyzed. The average age of the patients was 40.5 years. and 62.7% are male.

According to etiology, the leading cause of PED is corneal trauma and burns. Their gender distribution shows that in men the leading causes are the presence of a foreign body in the cornea and keratitis, respectively in women - injuries and burns, followed by corneal dystrophies.

The evaluation of the subjective indicators shows that 92.2% of the patients experienced pain before the start of the treatment, and in 33.3% it was pronounced, and in 43.1% it was severe. These are patients with keratitis, trauma and burns. A significant reduction in pain is reported already in the first week.

Pronounced redness was reported in 42.2% of the patients and moderately pronounced in 30.4%. On the 1st week, a significant improvement is reported - in 50% of cases, this indicator is missing. A statistically significant difference was found in the perception of redness in patients with different etiology - it is most severe in cases of keratitis and burns.

Of the examined patients, the largest percentage was those with the size of the epithelial defect - 3-5 mm. (34.3%) and in the first week 61.8% had a complete recovery.

According to etiology, the defect in patients with inflammatory diseases is the biggest. Other objective signs were also monitored - injection and visual acuity in various corneal diseases.

Conforming to the treatment, the patients were divided into 4 groups - for each group, the objective and subjective indicators were tracked. The data are presented in tables and illustrated with photographic material.

The fact that a difference in the thickness of the limbal epithelium was found is interesting. The smallest thickness was measured in patients with corneal dystrophies, and the largest in patients with dry eye.

A general drawback of the discussion is that results from other authors' studies are presented, which is more suitable for a literature review. The technique of placing the amniotic membrane is presented, illustrated with photographic material, which should be present in the "material and methods" chapter. A comprehensive analysis and explanation of own results compared to those of the world literature is lacking.

The discussion ends with conclusions of the dissertation work. There are 10 which follow the logically set tasks and present well the results of the dissertation work.

The contributions are two of a cognitive nature, 4 with a scientific-applied nature and 3 with a practical nature.

Dr. Nikolova presents a list of two publications related to the topic of the dissertation work. The abstract of the dissertation work is written in 76 pages, meets all the requirements for issuing an abstract and accurately reflects the results and contributions of the dissertation.

Recommendation for the dissertation student:

To continue scientific research in this field of ophthalmology and to increase its publication activity.

Conclusion: The scientific work of Dr. Neli Krasteva Nikolova is up-to-date, original and with interesting scientific and scientific-applied results. It has some inaccuracies and a missing bibliography in Bulgarian, but nevertheless the work has an indisputable scientific value in the therapy and diagnosis of POP diseases. Therefore, I give a positive assessment to the dissertation work of Dr. Neli Krasteva Nikolova and allow myself with full conviction to propose to the members of the Scientific Jury to vote with a positive vote for the awarding of the scientific and educational degree "Doctor" in the scientific specialty "Ophthalmology" ".

26.12.2024

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reviewer:

prof. Snezhana Murgova, MD.

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