

## OPINION

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I present this opinion in my capacity as an external member of a scientific jury, determined by Order No. R-109-288 of the Rector of MU-Varna, Prof. Dr. Paraskev Stoyanov"-Prof. Dr. Valentin Ignatov.

**Regarding:** The dissertation work of Dr. Zlatka Georgieva Dimitrova-Sandulova on the topic: "DIAGNOSTIC APPROACHES AND CLINICAL BEHAVIOR IN HYDRONEPHROSIS DURING PREGNANCY" with scientific supervisors Assoc. prof. Kremen Tsvetkov d.m. and Assoc. prof. Tosho Ganev, d.m. for the awarding of an educational and scientific degree "Doctor" in the field of higher education "7 Health and sport", scientific direction "7.1. Medicine", scientific specialty, "Obstetrics and gynecology".

The opinion was prepared on the basis of the presented Dissertation and Abstract. They are properly formatted and meet the requirements for the structure of scientific work, according to the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations on the Terms and Conditions for Acquiring Scientific Degrees and Holding Academic Positions at the Sofia University.

Data about the doctoral student: Dr. Zlatka Georgieva Dimitrova-Sandulova was born on 20.01.1982. He graduated from secondary education at PMG "Geo Milev" in Stara Zagora in 2000. He graduated in the specialty of medicine at the University of Varna - 2007. From 2010 to 2016 he specialized in the department of AG - Varna and in 2017 acquired the specialty "Obstetrics and Gynecology".

In 2019, she was enrolled as a full-time doctoral student at the MU "Prof. Dr. Paraskev Stoyanov" - Varna.

He is a member of the Scientific Society of Obstetrics and Gynecology and the Bulgarian Medical Association.

#### **Relevance of the topic**

Normal course of pregnancy, without complications and a good outcome is sometimes a challenge in obstetric practice. Hydronephrosis during pregnancy is common and considered physiological (over 90%). This determines the difficulty in setting the diagnostic criteria and behavior. On the one hand, this is the most common physiological condition, but on the other hand, it can accompany and lead to a number of complications and a poor outcome of the pregnancy. To date, the problem has not been addressed in Bulgaria and no behavior algorithm has been created. The high frequency of hydronephrosis during pregnancy makes the topic extremely interesting and relevant.

#### **Dissertation structure:**

The dissertation is written in literary Bulgarian and is set out on 135 standard computer pages. Illustrated with 41 tables and 24 figures. The bibliography includes 286 titles, with only 17 of them in Bulgarian, the remaining 269 in Latin. This shows the depth of the analysis and the modernity of the problem on the one hand, and on the other the lack of such research in our country. The dissertation includes: literature review – 42 pages, aim and tasks – 1 page, clinical material and methods – 18 pages, results and discussion – 51 pages, conclusions – 1 page, contributions – 1 page, bibliography – 13 p.

**The literature review** is extremely detailed, presented on 42 pages, reflecting in-depth knowledge in the field of normal anatomy and physiology of the genitourinary system, pathological features outside and during pregnancy. At the same time, the topicality of the problem on a global scale is presented, citing 269 sources, mainly from foreign authors. It is interesting to consider the problem from the perspective of the increasing frequency of elderly patients and the corresponding increase in accompanying diseases. The need for an interdisciplinary approach in diagnosis and treatment was found. The literature review covers the main points of discussion, it is comprehensive and completely sufficient to shape the main directions of the study.

**The aim is:** To compare the diagnostic approaches and to study the clinical behavior in pregnant women with hydronephrosis in the first and second half of pregnancy. The goal is clearly and precisely formulated. Seven tasks have been set for its achievement.

**Material and methods:** A prospective and retrospective study involving 184 pregnant patients was performed.

Study participants were selected using pre-designed inclusion and exclusion criteria that were strictly adhered to. Inclusion and exclusion criteria are clearly and precisely defined. The patients are in different age groups and gestation periods, which allows for the completeness of the analysis. Research methods and methodology are precisely selected.

A variety of diagnostic methods have been used. The good and team work, dealing with the difficulty in the diagnosis and the solution of the problem due to the presence of pregnancy is worth noting.

The therapeutic-conservative and operative method for the treatment of the disease is presented clearly and in detail.

**Statistical processing of the results:** The processing of the results is precise and methodical. Proven and modern methods of mathematical analysis of the processed results were used.

**The results of the study** are presented consistently and systematically, with good visualization with tables and figures. When interpreting one's own results, each section is followed by a discussion and relevant conclusions.

After consideration of demographic indicators, an analysis of clinical symptoms was performed. The most common and leading symptom is pain - in almost half of the patients - 45.11%. It is noteworthy, however, that it is missing in a large number of patients. The hidden course of the disease is underestimated and the obtained results sharpen our attention to asymptomatic patients.

The second symptom - temperature - is also observed in a small percentage - 14.7%.

Of the laboratory indicators, the following were analyzed: leukocyte count and CRP, due to their important clinical significance in terms of therapeutic behavior. The influence of physiological leukocytosis is reported.



Global data have been confirmed that during pregnancy, leukocytes, as an independent marker, are not sufficient for a definitive diagnosis. When analyzing CRP, it was found that 40% of the patients had elevated values of the acute phase marker. CRP has been shown to be suitable for monitoring the adequacy of conservative therapy. It has been proposed to combine the two indicators – CRP and leukocyte count.

The high rate of surgical treatment in the presence of the symptom "nausea and vomiting" is striking. This percentage reaches 66.7% when combining and considering the symptom "pain".

In the second part of the dissertation, the treatment of hydronephrosis is considered. Clinical and statistical data indicate that 85.87% of cases (158 women) were treated conservatively. Urological manipulation was necessary in 26 patients (14.13%). The analysis shows that 93.75% of patients with 1st degree CKD were successfully treated conservatively, 83.33% with 2nd grade CKD, and 57.14% with 3rd grade CKD.

The conclusions in the dissertation are 9 in number, and they are accurately and clearly presented. They derive from the results of the survey and are supported by the data from the statistical processing. The obtained results and conclusions can serve to change the behavior and treatment of hydronephrosis during pregnancy. The data on the relatively smaller percentage of pregnant women with high-grade HN are encouraging, indicating a good therapeutic response. The latter results could be used for prognostic purposes already during the taking of the anamnestic data, ultrasound and establishing the country and degree of HN.

**The contributions** are correctly formulated, with scientific and practical value. They reflect the achievements of the doctoral student in the developed topic. As particularly important, I find the diagnostic and treatment algorithm created for pregnant women with CH with the possibility of wide application in medical practice.

**The abstract** is prepared in accordance with the requirements and accurately reflects the parts of the dissertation work.

**Publications and participation in congresses:** The PhD student has presented 3 publications as first author and one as a participant. The interdisciplinary participation is impressive.

## **CONCLUSION:**

The dissertation and Abstract submitted to me for opinion meet all the requirements of the Regulations for Scientific Degrees. It presents scientific results with clinical significance and practical applicability. The created diagnostic-treatment algorithm is useful and has value for solving the problem "Hydronephrosis and pregnancy"

Based on the above, I give a positive opinion on the dissertation work on the topic "DIAGNOSTIC APPROACHES AND CLINICAL BEHAVIOR IN HYDRONEPHROSIS DURING PREGNANCY" for the awarding of the educational and scientific degree "DOCTOR" to Dr. Zlatka Georgieva Dimitrova-Sandulova.

20.08.2022

Prepared opinion:



Sofia

/ Assoc. prof. Vesela Karamisheva, DM/