



**Editorial**

Hong Kong J Obst Gynae  
ISSN (e): 2663-8088  
ISSN (p): 2663-8177  
2018; 1(1): 04-05  
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**Actuality of the diagnostic problem of purulent-inflammatory diseases in modern medical practice**

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**Editorial**

The problem of diagnostics is one of the main issues in medical practice. After all, the correct diagnosis allows us to choose the best effective therapeutic tactics. Therefore, the development of modern diagnostic methods is a priority area at the present stage of development of medicine.

Purulent-inflammatory diseases and sepsis in the world continue to be a significant cause of mortality. According to World Health Organization WHO (2017), sepsis develops annually in 30 million people and causes deaths of 6 million patients, particularly in low- and middle-income countries. Every tenth death in pregnant women and childbirth is associated with maternal sepsis. 95% of them occur in underdeveloped countries. One million of newborns dies annually because of maternal sepsis. Also, 3 million newborns and 1.2 million of children are suffering from sepsis. 3 out of 10 cases are caused by drug-resistant pathogens.

Many modern diagnostic methods are formed at the junction of various sciences, in particular physics and medicine. The method of fluorescence spectroscopy was used to diagnose oncological pathology, liver and connective tissue diseases. It also proved to be effective in conducting modern medical research in molecular biology, directed at detecting genetic mutations in the development of myeloproliferative disease, polycythemia, in acute myeloid leukemia, acute promyelocytic leukemia, and in acute promyelocytic leukemia. Similarly, it is possible to determine the predisposition of an organism to the appearance of venous thrombosis (3).

**The purpose of our research** is to use the method of fluorescence spectroscopy effectively for the diagnosis of purulent-inflammatory diseases and sepsis, including obstetric and gynecological practice.

**Materials and Methods-** The experimental research base is the Department of Experimental Physics of the Ivan Franko Lviv National University. The clinical basis of the research is the Vinnytsia Clinical Maternity Hospital №2 (obstetric and gynecological patients). Clinical basis for surgical patients was the Communal City Clinical Hospital of Ambulance (Lviv) and the the 8th City Clinical Hospital of Lviv (burn patients). The object of the study was blood serum of the patients. The research was conducted using monochromators MDR-2 and MDR-12.

**Results-** The background for using the method of fluorescence spectroscopy for the diagnosis of purulent-inflammatory diseases is the conformational changes in albumin molecules at presence of these diseases. We used light with a wavelength of 280 nm for the serum excitation of blood. It corresponds to the wavelength of excitation of albumin molecules.

In this way we can record the changes in fluorescence spectra of serum of patients with purulent-inflammatory diseases and sepsis (Patent of Ukraine №76953). The main advantage of this method is the high sensitivity, accuracy, expressiveness, the ability to obtain reliable results for 24-48 hours until the clinical manifestations of the disease are obtained (4). The fluorescence spectra have the form of lambda-like curves. We conducted an analysis of indicators - the intensity of fluorescence (I) and the maximum of fluorescence position - lambda, nm.

In the presence of purulent-inflammatory diseases, there is a decrease in the fluorescence intensity of the blood serum. In severe cases, there is a long-wave shift in fluorescence spectra. In particularly difficult cases, the fluorescence spectra acquire the appearance of "two-hump" curves with the formation of an "additional septic" peak of fluorescence bands. The results of the conducted studies are processed using the methods of variation statistics.

**Conclusions-** The results obtained using the method of fluorescence spectroscopy allow to do the early diagnostics of patients with purulent inflammatory diseases (1) and sepsis, as well as monitoring the state of patients in the dynamics, including in the process of treatment. Reliable factors of development of postpartum endometritis are established (2).

**Prospects for further research-** The results allow to appoint an effective treatment in time and to improve the recovery and survival rates of purulent-inflammatory diseases and sepsis. There are also real prospects for the development of effective pathogenetic treatment of purulent-inflammatory diseases and sepsis, taking into account the effective results of the conducted research. A series of studies is planned to develop a prognostic model for the development of postpartum endometritis using the method of logistic regression and ROC analysis.

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