

## **287. MECHANISMS OF VENOUS THROMBOEMBOLISM IN ORAL CONTRACEPTION**

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**Introduction.** Combined oral contraceptives (COC) are more and more used by fertile women, as well as teenagers in different cases, like dysmenorrhea, endometriosis, ovarian polycystic syndrome, dysfunctional uterine bleeding (DUB) and hormone-replacement therapy (HRT) for primary ovarian insufficiency. Even if they act efficiently in pregnancy prevention and hormonal regulation, they also significantly increase the risk of venous thromboembolism. Recent researches have shown that the risk of venous thromboembolism depends a lot on the ratio of estrogen/progestin in combined oral contraceptives and on thrombotic events of women on COC.

**Aim of the study.** Description of the mechanisms that can induce venous thromboembolism and the selection of women potentially predisposed to them. Highlighting the frequency of their occurrence depending on the ratio estrogen/progestin in the composition of combined oral contraceptive. Individual prescription for oral contraceptives, in order to reduce their risk for health.

**Materials and methods.** The literature analysis has been conducted using 98 bibliographic sources from PubMed search engine starting with January 2017 and from PMC since January 2015.

**Results.** In women with mutation of Factor V Leiden and prothrombin, as well as defects of antithrombin III, protein C and S, that take hormonal contraceptives, the risk of venous thromboembolism increases up to 3-9%, unlike women who do not take them. Also, women who take oral contraceptives with estrogen and levonorgestrel, deriving from progestin, have a high level of Factor VII, X and fibrinogen, produced by high hepatic synthesis stimulated by the first hepatic degradation of estrogen, and high APC resistance and low level of antithrombin and protein S. Thus, favorable conditions for venous thromboembolism occur.

**Conclusions.** In women who take oral contraceptives the risk of thrombosis is higher than in women who do not take them. The mechanisms inducing venous thromboembolism depend a lot on the specific ratio of estrogen/progestin and the presence of hereditary or acquired thrombophilia in women on COC.

**Key words:** oral contraceptives, venous thromboembolism, hormones, thrombophilia

## **288. POSTCONDITIONING – A MECHANISM FOR PREVENTION OF ISCHEMIA/REPERFUSION INJURY**

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**Introduction.** Ischemia is a pathological condition when the blood supply to a tissue is interrupted and may lead to irreversible damages due to lack of oxygen and nutrients. There are many diseases, such as myocardial infarction, ovarian torsion, ischemic stroke, where the

quick intervention of the physician may save the organ from necrosis. The first treatment option is to remove the cause of ischemia, but the studies revealed that the reperfusion is able to worsen the initial lesions that were only due to disrupted blood flow. The scientists propose postconditioning as a technique for reducing the reperfusion injuries.

**Aim of the study.** The aim of the study was to do a research of the specialized literature to assure a better understanding of the mechanisms of protection of postconditioning in the context of the diseases characterized by ischemia/reperfusion injuries.

**Materials and methods.** Were studied the articles from PubMed database over the last ten years describing the mechanisms of ischemia/reperfusion injury in different organs and the effects of postconditioning as a method of protection against reperfusion lesions. Were used the following keywords: postconditioning, ischemia/reperfusion injury.

**Results.** The reperfusion injuries are due to activation of different metabolic pathways that are related to toxic compounds formation, such as reactive oxygen species (ROS), with deleterious effects on cell components. The studies revealed that during reperfusion the level of malonic dialdehyde, a biomarker for membrane lipid peroxidation, increases, and this is due to a high level of ROS. Moreover, the literature related to reperfusion injury emphasizes the role of the increased intracellular calcium concentration with activation of different enzymes, the opening of the mitochondrial permeability transition pore, inflammation, increased endothelial dysfunction, and neutrophils activation. Postconditioning after ischemia involves short-term cycles of ischemia that alternate with reperfusion, at the onset of the restoration of the blood flow. It was established that the mechanisms of protection are considered to be related to a reduction of ROS production, inhibition of mitochondrial permeability transition pore, activation of ATP-dependent K-channel through adenosine, which affects the intracellular calcium levels, nitric oxide and pro-survival kinase.

**Conclusions.** Postconditioning which represents the gradual restoration of blood flow can reduce the extent of reperfusion injury by various mechanisms. The results of the experimental studies on different ischemic organs showed that the short episodes of interruption of the blood flow from the onset of reperfusion, essentially reduced the size of the lesion, compared to a normal revascularization. The postconditioning must be taken into account when there are ischemic diseases.

**Key words:** postconditioning, ischemia/reperfusion injury

## **289. THE LINK BETWEEN DIABETES MELLITUS AND ALZHEIMER'S DISEASE**

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**Introduction.** Type 2 Diabetes mellitus (T2DM) represents a major public health burden and a growing prevalent chronic disease around the world. It is known that more than 425 million people have diabetes, and this number is expected to rise to over 642 million by 2040. Alzheimer's disease (AD) is the main cause of dementia, affecting over 26 million people worldwide, and its prevalence continues to increase. Both conditions are related to age, and in the last decades, an interesting link between them has appeared from various studies that affirm