synthesis. In the last decade, epigenetic markers like DNA methylation and posttranslational modifications of histone tails have emerged as important regulators of the memory process. (Zovkic IB et al, 2013).

**Aim of the study.** This review describes cellular processes of synaptic plasticity, particularly functional and structural changes and events that are important for the initial memory acquisition, as well as mechanisms of short-term and long-term memory storage.

**Materials and methods.** This is a review articles of human studies, clinical trials, bibliographies and books from databases like PMC, PubMed, Elsevier, Wiley Online Library.

**Results.** The long-lasting memory storage needs the synthesis of a specific set of proteins, this is an elegant way to solve the problem of how a neuron with 10,000 synapses can maintain changes in a few specific synapses without affecting others.

**Conclusions.** For the past 40 years, the studies into the neural basis of memory focused on the molecular and cellular basis of activity-dependent plasticity. Further progress in examining the conceptual foundation of memory will require an approach that takes into consideration the importance of timing events in the CNS on every level of complexity.

**Key words:** synaptic plasticity, memory consolidation, information storage, cell signaling, long-term potentiation

## 284. THE IMPORTANCE OF UMBILICAL CORD INSERTION SITE FOR THE PHYSIOLOGICAL DEVELOPMENT OF PREGNANCY

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**Introduction.** The study of the variability of the umbilical cord insertion site brings a further understanding of the pregnancy`s physiological development, as well as it could help in choosing the best strategy for birth-giving. It should be highlighted that annually 4000 deaths of newborns worldwide are caused by the umbilical cord pathology. Additionally, the pathology of the umbilical cord is present in 30% of pregnancies carried out until the term. Therefore, knowing the insertion of the umbilical cord in the placenta could help the obstetricians in having an individual approach to the pregnancy and the actual birth, in order to prevent complications and abnormalities.

**Aim of the study.** This study is centered on the correlation between the type of umbilical cord insertion in the placenta and the physiological development of the pregnancy, but also on the obstetrical importance of the obtained results.

**Materials and methods.** The data of this study were collected from the medical records of 4010 women aged between 15 and 46 that gave birth at the Public Health Institution ”Institute of Mother and Child” in 2014. According to the results, the subjects were divided into 4 groups, by the type of the insertion of the umbilical cord: 1st group - normal insertion, central and eccentric (n = 3995), 2nd group - velamentous insertion (n = 11), 3rd group - marginal insertion (n = 5) and 4th group - furcate insertion (n = 0). The experimental protocol included the abnormalities presented by the fetus and the occurred complications during pregnancy/birth-giving, correlated with the types of umbilical cord insertion.

**Results.** Central and eccentric types of umbilical cord insertion represent 99.6% and are not correlated with any pathologies of the pregnancy, birth-giving process, or fetus. On the other

hand, the velamentous insertion represents 0.27% and the marginal insertion - 0.12%. Both of them are associated with massive blood loss at birth, hemorrhagic complications in the antenatal period, miscarriage, hypotonia and cyanosis in the newborn, difficulties in approaching the birth and sudden intrauterine death of the newborn caused by hypoxia. Furcate insertion of the umbilical cord was not found, because it has the lowest incidence, as other studies have shown.

**Conclusion.** Even if the incidence of the pathological types of the umbilical cord insertion is low, the associated abnormalities are severe and must be taken into consideration. Thus, punctilious and continuous monitoring of the development of the pregnancy, including the analysis of the insertion type could help the obstetricians in providing professional medical assistance. It should be said that the formation of the umbilical cord is finished at 7 weeks of pregnancy. So, by using an ultrasonographic examination in the 1st trimester, between 12 and 15 weeks, it is possible to determine the insertion type of the umbilical cord. To sum up, all the necessary precautions can be taken in time and pregnancy/birth-giving can occur physiologically, with no harm to the mother and fetus.

**Key words:** Physiology, obstetrics, umbilical cord, development, pregnancy.

## DEPARTMENT OF PATHOPHYSIOLOGY AND CLINICAL PATHOPHYSIOLOGY

### 285. PLACEBO AND NOCEBO EFFECTS - A SYNTHESIS OF MAIN UNDERLYING MECHANISMS

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**Introduction.** Although the effects of placebo have been known in medicine for several centuries, the research of the underlying mechanisms has developed relatively recently. Consequently, in the last decades, numerous studies and researches have been published, most of them focused on symptoms such as pain, fatigue, nausea and itching.

**Aim of the study.** To disclosure the main mechanisms underlying the placebo and nocebo effects.

**Materials and methods.** The study was performed in the base of reviewes of various researches and scientific materials (articles in specialized journals, monographs and articles on the Internet etc.) that refer to placebo/nocebo effects description and observation.

**Results.** The classical conditioning theory and the response expectancy model were considered for a long time the most accepted theories explaining the underlying processes of placebo/nocebo phenomena. Numerous researches revealed that suggestions, thoughts and beliefs could have an important influence on human body, thus giving rise to specific therapeutic processes. However, placebo and nocebo effects are not mediated only by psychological mechanisms. There is a clear evidence of neurobiological changes at different levels and areas of the brain, involving endogenous opioids, as well as dopamine, especially in the case of the analgesic placebo effect. Similarly, such neuromodulators as cholecystokinin play a significant role in the nocebo effect. The findings concerning the involvement of the genetic mechanisms in the process of manifesting placebo/nocebo effects cannot be neglected. In the last years, the studies reveal that genetic variations in the brain's neurotransmitter