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The Myometrium Ultrastructure Study by Transmission Electron Microscope

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The study aims at presenting certain ultrastructural aspects concerning the compounds of the human myometrium, during non-pregnancy and pregnancy at term, as a physiological stage [1]. The transmission electron microscopy technique has been used for observing the ultrastructural aspects of the myometrium compounds, in non-pregnancy and in the pregnancy. In this context, the ultrastructural changes in the physiological pregnancy are considered to be according with the particularities of the hormonal status, comparing with the non-pregnancy stage [3].

According to the reserachers studies referring to the uterus, as a hormone-responsive reproductive organ, influenced by the ovaries hormones, different types of muscle jonctions can be observed in the myometrium, as characteristics for the effect of the estrogens and/or of the progesterone, as most important hormones, implied in pregnancy stage ultrastructural changes. In this context, we monitored the ultrastructural particularities appearing at the myometrium compounds, as smooth muscle, connective tissue and blood vessels, in pregnancy by comparison with non-pregnancy [2]. This study has been done between collaboration of obstetrics-gynecology physicians, pathology specialists and researchers from medical faculty.

The study was achieved by comparison, using two lots constituted of non-pregnant womens and pregnant womens at term. The samples of myometrium taken from both lots of patients implied in the study were taken under the strict observation of the specialists, physicians in obstetrics - gynecology, according to the medical ethics principles.

In the study there was used an electronic transmission microscope Philips 300 with magnifications between x1000-x5000.

The fragments taken for examination with the electronic microscope were processed by the technique that includes following stages such as the fixation with glutaraldehyde in cacodyl pad for 90 minutes at 4°C, washing with cacodyl pad pH 7.4, three times for 5 minutes at 4°C; incubation in GÖMÖRI environment; postfixation in OsO₄ of 1%, for 90 minutes at 4°C; rinsing in bidistilled water three time for 5 minutes each, at room temperature, block coloring in uranyl acetate for 30 minutes, at 4°C in the dark, washing with 10% alcohol, twice, 3 minutes each, at room temperature; dehydration with propilenoxide, twice for 5 minutes each at room temperature; dehydration with absolute ethylic alcohol, 3 times, 5 minutes each at room temperature; dehydration with propilenoxide twice, 5 minutes each at room temperature; penetration in Epon with inclusion in propilenoxide (1:1), for minimum one hour, followed by the evaporation of propilenoxide, up to 8 hours, penetration with Epon inclusion for 2 hours, inclusion, ultra sectioning at microtoms, grids contrasting and grids examination at the electronic microscope.

The myometrium infracentrimetric samples from the non-pregnant womens, were taken during the hysterectomies and the myometrium samples from the pregnant womens at term, were taken according with accept of the pregnant womens, during the Caesarian, by respecting the ethical principles and without affected the health of the future mother or the health of the future newborn baby.

The observations at the transmission electron microscope aimed appreciations concerning the compounds particularities of the myometrium in non-pregnancy and pregnancy at term. In this context, there were noticed changes concerning the muscle fibres, surrounding connective tissue and concerning the blood vessels of the myometrium. The ultrastructural aspects of these compounds, was observing comparatively during physiological pregnancy at term stage and non-pregnancy stage. In the present ultrastructural study we may distinguish the sarcoplasma of the muscle fibres and also we may distinguish the adherens jonctions and the gap jonctions, between and among the uterine muscle fibres.

Also in the present study the pregnancy is considered as being myometrium active stage, fact that brings informations referring at the ultrastructure of the myometrium muscle fibres and them

functionality, taking into consideration them particularities related to the vicinity with the surrounding connective compounds and blood vessels. In this context, the study allowed electron microscopy appreciations, concerning the characteristics of the myometrium ultrastructural compounds, according to each of both physiological states, taking into consideration the aspects referring to the hypertrophy and hyperplasia of the uterine muscular compound in pregnancy at term.

Using the electron microscopy technique, the orientation to the study of these aspects is compliant with the remarks confirming that in the uterus, besides the smooth muscle tissue, we may at the same time notice the presence of the connective tissue and of the blood vessels.

In this context, by observing the varied forms of myocytes, has been concluded the specific functions of the smooth muscle, such as tension, contraction and relaxation, which are considered to be the result of the coordinated activity of the muscle cells. Also, the study help for answering if the myometrial contraction is isotonic or isometric. From this point of view, we consider that the function of the myometrium, is known as an isometric contraction with changes in pregnancy at term compared with non-pregnancy stage and, as a conclusion, referring to the myometrium, are appreciations, as being a functional syncytium.

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