

PS-10-021**Structural profile of the placental terminal villi stroma remodelling with emphasis on oxidative stress during pregnancy**

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Background & objectives: Morphological alterations of placental terminal villi can cause organ's dysfunction, leading to deficiency of a foetal oxygen and nutrients supply.

The aim of this study was to investigate the remodelling of the placental terminal villi stroma under oxidative stress conditions.

Methods: Morphological study was carried out in following groups: I- 20 placentas from mothers with non-operated congenital heart defects (CHD); II- 19 cases of operated CHD and 15 cases of physiological pregnancy-control group (CG). The immunohistochemical (IHC) staining protocol with monoclonal mouse antibodies to collagen IV and collagen III for placental tissue has been developed. The differences between groups were identified by Mann-Whitney U-test at $p < 0.05$.

Results: Histological study revealed violations of the placental chorionic villi maturation in CHD groups, especially in the I group. Morphometry showed a decreased volume fraction (VF) of the terminal villi stroma in CHD cases (I- 20.0(11), II- 20.0(4), CG- 24.0(12)%, $p < 0.05$). IHC analysis discovered the expression of the atypical collagen III type in the group I. The VF of the type IV collagen decoration area consistently decreased from I to the II group and to the CG (respectively: 19.0(6)-16.0(5,75)-11,5(7,75)%, $p < 0.05$).

Conclusion: Hypoxia during gestation impacts both maternal health and foetal development. Placental villi maturation disorder with enhanced villi immaturity may cause the disruption of foeto-maternal metabolism and gas exchange via placental membrane (PM). The decreased VF of the villi stroma contributes the thinning of PM, thus promoting to the enhancement of transplacental exchange. Placental villi stroma remodelling, the role of collagen types III and IV discussed in the aspect of placental adaptations to oxidative stress due to hemodynamic disorders in CHD cases.

PS-10-023**Basal plate myometrial fibres: a lesion of shallow placental implantation**

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Background & objectives: Basal plate myometrial fibres (bpmf) with or without intervening decidua is the earliest and clinically asymptomatic lesion of abnormal placentation. This retrospective analysis is an expansion of our clinicoplacental studies combining bpmf and occult placenta accreta.

Methods: 169 most recent consecutive cases with placental bpmf with or without intervening decidua (Group 1) were compared to 1661 cases without bpmf (Group 2). Frequencies of 25 independent clinical and 40 placental phenotypes were statistically compared between the groups.

Results: Of 1830 placentas examined since 2009, 169 showed bpmf (11.2%). Placentas with bpmf as compared with placentas without bpmf were statistically significantly ($p < 0.05$) more common in association with cesarean sections (11.2% vs 7.5%), antepartum haemorrhage (17.7% vs 11.6%), gestational hypertension or preeclampsia (23.1% vs 6.0%), complicated 3rd stage of labor (18.9% vs 6.4%), villous infarction (14.2% vs 8.9%), uterine pattern (14.8%, vs 9.6%), massive perivillous fibrin deposition (9.5% vs 5.3%), chorionic disc chorionic microcysts (21.8% vs 15.9%), clusters of maternal floor multinucleate trophoblasts (27.8% vs 21.2%), excessive trophoblasts of chorionic disc (24.3% vs 17.3%), segmental villous avascularity (27.8% vs 19.9%), and foetal vascular ectasia (26.2% vs 15.2%).

Conclusion: Because of the association of bpmf with increased extravillous trophoblasts in the chorionic disc and maternal floor

trophoblastic giant cells, they should be included into the spectrum of placental lesions of shallow placental implantation rather than linked to decidual deficiency only.

PS-11 Pulmonary Pathology**PS-11-001****Polytropic effect of polymetallic dust on the experimental rats lungs**

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Background & objectives: Polytropic effect of dust depends on a complex chemical composition, which impact with possible effects of summation or potentiation on the organism. To study the polymetallic dust effect on the lung tissue of experimental animals at intratracheally exposure.

Methods: The experiment included 30 outbred white male rats weighing 180-220g, for 30 days. Lung pieces were fixed in neutral formalin 10%, morphological studies were carried out according to standard methods. The object of the study was the lung tissue of experimental animals. The experiment was realized according to «Rules for biomedical experiments conducting» of MH RK (November 12, 2009 №697).

Results: The initial stages of desquamative bronchitis and a pathological tumour in the middle lobes of the lungs with compaction of the lungs stroma of oncological nature were revealed after intratracheal dusting. An accumulation of dust as rounded formations surrounded by fibroblasts, fibrocytes and macrophages was noted in the adventitial bronchi membrane.

The number of destroyed alveoli increased, the formation of pronounced emphysematous zones occurred subpleural in the lungs of rats.

Conclusion: It can be assumed that dust causes a polytropic effect on lung tissue, provokes the formation of a tumour of a malignant nature and degeneration of fibrous tissue, since it is associated with a violation of the parenchyma of the lungs and blood vessels with the subsequent formation of cell-dust foci and expressed subpleural emphysematous zones.

The preserved alveoli were different shape, the blood vessels were characterized by plethora and severe perivascular oedema.

PS-11-002**Pathomorphological changes in the lung parenchyma at the exposure of multicomponent polymetallic dust**

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Background & objectives: The clinical picture of dusty diseases indicates damage of the lung tissue and respiratory tract with the development of pneumosclerosis, chronic bronchitis and bronchial asthma.

To study the pathomorphology of the lung parenchyma after exposure of dust in various doses.

Methods: Experimental study was carried out on outbred white rats weighing 180-220 g for 30 days. Effective doses of the toxicant 10 mg/m³ and 25 mg/m³ were used. The experiment was carried out by «Rules for biomedical experiments conducting» of MH RK (November 12, 2009 №697).

Results: The initial stage of desquamative bronchitis was revealed in the bronchi; in the bronchi adventitia, cell-dust foci of polymetallic dust accumulation surrounded by fibroblasts, fibrocytes and macrophages were observed. The number of destroyed alveoli increased with dose increasing, and the formation of expressed emphysematous zones of pneumosclerosis increased.