

### 30. MODIFICATION IN STRUCTURE AND FUNCTION OF CILIA IN EPITHELIAL CILIATED CELLS IN PATIENTS WITH HYDROSALPINX

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**Introduction.** The pathologies of the fallopian tubes remain to this day one of the major problems of modern reproduction as they can lead to infertility. Hydrosalpinx is among these pathologies and it is characterised by the dilation and filling with fluid of one or both of the fallopian tubes. As a result, the structure and functions of the cilia of the fallopian epithelium change, resulting in infertility.

**Aim of study.** To study the changes of the structure and function of the cilia in case of hydrosalpinx.

**Methods and materials.** Several scientific articles were selected by keywords: hydrosalpinx, cilia, axoneme.

**Results.** The study of the ultrastructure of the cilia of the tubal epithelium in patients with a normal reproductive function revealed a regular structure of the cilia axoneme, described by the formula  $(9 \times 2) + 2$ . It consisted of 9 doublets of microtubules, and a centrally located pair of microtubules. The central pair was surrounded by a central sheath from which the radial spokes extend to the peripheral doublets. These doublets were connected to each other by nexine bridges. Microtubule A was connected to microtubule B of the neighbouring doublet by dynein, which has ATPase activity. On the outside, each lash was covered with plasmalemma which normally has a flat surface. A detailed study of the cilia of the tubal epithelium of all patients with hydrosalpinx revealed abnormalities in their structure, in addition to the decrease in their total number. In most of the cases, the cilia plasmalemma was uneven, which seems to have been the reason for their adhesion and fusion into conglomerates. There were cilia with disturbed axoneme architecture in virtually all the specimens. In some cilia, the central doublets of the axoneme were replaced by a single microtubule, and some lacked dynein bonds. In many cilia, the disorganisation of the nexine bridges and radial spokes has been highlighted, which considerably reduced their motor potential. The changes in the structure of the cilia are secondary and are the result of a long-lasting chronic inflammatory process in the endosalpinx, which resulted in the development of fibrosis in the submucosal layer and local blood vessels walls, which in turn inevitably led to epithelial cell degeneration and to disrupted processes of ciliogenesis.

**Conclusion.** The changes of the ultrastructure of cilia in hydrosalpinx were found related to the disorder of axoneme architecture and their function, resulting in infertility, but these data require further studies in both hydrosalpinx and other fallopian tube pathologies.