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CLINICO-MORPHOLOGICAL ANALYSIS OF THE MATERIALS FROM ENT-PATIENTS WITH MIXED VIRAL-BACTERIAL INFECTION

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The aspects of simultaneous influence of causative agents on the human organism have been insufficiently explored in the literature on complex diagnosis of mixed infections (particularly of viral bacterial etiology) [1-4]. The role of summing the effects of biological agents, different as to their hierarchy and nomenclature, in the development of clinical and morphologic shifts, and which of them is dominating is still unknown. There is no common opinion as to the specific character of structural and functional shifts, which are caused by introduction of polyetiopathogenic infection factors. Unfortunately, there is no objective information on the complex clinical and morphologic diagnosis of mixed infections in the available literature [5-7]. Therefore, the authors have made an attempt of complex clinical and morphologic analysis of the materials from ENT-patients with confirmed diagnosis of mixed infection of viral-bacterial etiology (human herpes simplex virus and mycoplasma hominis).

Materials and methods

The results of the objective examination, instrumental and laboratory tests (case histories), as well as the analysis of biopsy material taken from both male and female patients aged 3 - 73 (n=33) with recurrent herpetic oro-, laryngopharyngitis, tracheobronchitis treated at ENT Department of Kharkov Municipal Hospital No. NN were used as the material of the investigation. The materials (pieces of organs: pharynx, larynx, bronchus, and scratches of mucous membranes) were taken on the in-patient basis (at the operating table). Biopsies were performed in a standard way, with fixing by 12% phosphate buffered formalin (pH = 7.2-7.3), processing in battery of alcohols with increasing concentration, and further embedding in resins (paraffin, celloidin). Histologic sections (10-15 μ m) were made using sliding microtome in three reciprocally perpendicular planes. The specimens were stained with hematoxylin and eosin, azure-eosin, according to Van-Gieson, Brache, Crutsai. The specimens were studied with the help of LOMO light microscope (x 300, 600, 1350). The results were assessed in total.

Results and discussion

The investigation proved that the changes in the upper air passages were polymorphous and registered both microscopically and macroscopically. Mucous membranes of the larynx, pharynx, bronchi demonstrated pronounced properties of inflammatory processes (timely therapy of which caused considerable regression). The

epithelium looked swollen, edematous, crumby, which in some places lost its thin relief structure and its natural folds. The organs surfaces showed color changes from bright red, crimson (during exacerbation) to dull, pinky-grey (during regression). Quite obvious were exudation processes with onset of local suppurative plugs, membranes, threads. In some cases abscess formation was registered in retropharyngeal region. Supervision of patients showed that the very processes of instrumental investigation and primary material sampling (scratching) were quite painful. Clinically those procedures caused persistent prolonged temperature elevation up to low grade fever (37,1 – 37,3 °C), cough, rhinitis, shiver, weakness, sharp reduction of working ability, apathy, psychosomatic disturbances (e.g. reduction and disintegration of patient's self-appraisal, abnormal social patterns and personal and volitional properties, motor depression). As reported by the supervised patients, those symptoms lasted from 2-3 weeks to 1-2 months. Special attention was paid to vesicular-papular rash, which appeared in cases of low grade fever or before it. The patients complained of incessant itch attacks, which accompanied the rash and a certain localized pain. Cutaneous manifestations (such as red border of lips, nose wings), mucous membrane (oral cavity) were accompanied by frontal, temporal headache, light nausea (as manifestation of general intoxication) in adult patients, sometimes insufficient dyspepsia.

Microscopy of the specimens showed distinguished inflammatory phenomena, such as surface epithelium swelling, hyperplasia, abnormal layer-by-layer microtopography and surface architectonics. The majority of the biopsies (n=5x29) registered perivascular edema, every second case showed multiple focal bleeding into the submucosal membrane (n=5x16), lympholeucocytic proliferation appeared in n=5x21 specimens, lymphohistiocytic proliferation in n=5x24 specimens. Prominent desquamatory processes (n=5x19) took place together with the changes mentioned above. They affected not only mucous epithelium cells, but also endothelium vessels. Damages in the endothelial layer inevitably damaged (n=5x14) in the vascular wall layers and further perivascular edema (n=5x11), which, as a rule, was accompanied by intensive erythrocyte diapedesis (n=5x11). On the other hand, disturbance of membrane differentiation, and membrane potentials therewith, caused changes of superficial cell charges in the circulating erythrocyte population, which caused thrombus formation (n=5x6) and promoted formation of stases (n=5x4). Specific shifts were developing on the background of those non-specific phenomena. They mostly effected microscopic and submicroscopic organization of the structures under the study. For example, changes in morphometric parameters of nucleus to cytoplasm ratio (giant-cell metamorphosis in n=5x23), in nucleus sorption and cumulation parameters (hyperchromatosis in n=5x19), functionally instable sorption capacity of cell epithelium component cytoplasm (basophil / acidophil granules in n=5x19). Destructive-degenerative strategy of damages in the mucous membranes of the airways in the investigated patients became an invariable factor causing

restructurization of the cell pool and the whole tissue component [9,10]. This was strictly proved by numerous samples of focal necrotization which had acidophilic character (n=3-5x9). Therewith, at subcellular level, the facts of intensive swelling of mitochondria, lysosomes, agranular endoplasmic reticulum, cytoplasm general vacuolization or its lucidity were detected. Chromatin, karyorrhexis were redistributed in epithelium nuclei. Additional serology tests (IgG, IgM to herpes simplex virus, mycoplasma hominis) showed availability of the assumed causative agents and finally proved the correctness of prognostic assumptions obtained by means of biopsy material morphologic investigation [8].

Conclusion

Thus, combined influence of causative agents of mixed infections with viral-bacterial etiology (herpes simplex virus and mycoplasma hominis) on the upper airways mucous tissues in ENT patients caused summarized effect and development of the disease clinical signs against a background of structural and functional changes. Such effects summarization caused more severe clinical presentation of the disease, made its manifestations polymorphous, and prolonged the process term.

Clinical signs of a mixed viral-bacterial infection are characterized by persistent and prolonged low grade fever, cough, rhinitis, dyspepsia, psychosomatic abnormalities with inversion of personal and volitional properties and social patterns of patients.

Morphologic changes in tissues of the patient's respiratory organs had polymorphous character, which, on the one hand, showed the specificity of shifts in the tissue processes (metamorphosis, hyperchromatosis, cytoplasm granulosity, acidophilic necrosis), on the other hand, had some nonspecific characteristics (edema, dystrophy, inflammatory reaction). It is important that the morphologic features, which are traditionally considered virogenic, were dominating.

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КЛИНИКО-МОРФОЛОГИЧЕСКИЙ АНАЛИЗ МАТЕРИАЛОВ ПО ЛОР- БОЛЬНЫМ СО СМЕШАННОЙ ВИРУСНО-БАКТЕРИАЛЬНОЙ ИНФЕКЦИЕЙ

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В статье представлены материалы по клинико-морфологической диагностике ЛОР-больных со смешанной вирусно-бактериальной инфекцией. Указано, что в условиях развития микст-инфекций происходит усиление этиопатогенных эффектов с выраженными утяжелением госпитальной картины болезни, полиморфизмом ее проявлений и пролонгированием течения заболевания. Характерные для инфекционных заболеваний соматические симптомы, дополняются психотическими сдвигами, состоящими в инверсиях личностно-волевых качеств. Формирование клинического симптомокомплекса осуществляется с безусловным вовлечением органики на фоне структурно- функциональных изменений в глотке, гортани, бронхах специфического и неспецифического свойств. Интересным фактом является то, что доминирующий характер проявлений принадлежит морфологическим изменениям, традиционно считавшимися виrogenными (ядерно-цитоплазматические соотношения, нестабильная сорбирующая способность цитоплазмы, сорбирующе-кумулятивные свойства ядер).

Ключевые слова: ЛОР-больные, клинико-морфологический анализ, смешанная вирусно-бактериальная инфекция, глотка, гортань, бронхи.

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КЛІНІКО-МОРФОЛОГІЧНИЙ АНАЛІЗ МАТЕРІАЛІВ ЗА ЛОР- ХВОРИМ ЗІ

ЗМІШАНОЮ ВІРУСНО-БАКТЕРІАЛЬНОЮ ІНФЕКЦІЄЮ

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Короваєва І.В.**

В статті наведені матеріали щодо клініко-морфологічної діагностики ЛОР-хворих із змішаною вірусно-бактеріальною інфекцією. Вказано, що в умовах розвитку мікст-інфекції відбувається посилення етіопатогених ефектів з позначеною тяжкістю госпітальної картини хвороби, поліморфізмом її проявів та пролонгуванням перебігу захворювання. Характерні для інфекційних захворювань соматичні симптоми, доповнюються психотичними зрушеннями, що складаються з інверсій особистісно-вольових якостей. Формування клінічного симптомокомплексу відбувається з безумовним втягненням органіки на фоні структурно-функціональних змін у глотці, гортані, бронхах специфічних та неспецифічних властивостей. Цікавим фактом є те, що домінуючий характер проявів належить морфологічним змінам, які традиційно вважаються вірогенними (ядерно-цитоплазматичні співвідношення, нестабільна сорбуюча спроможність цитоплазми, сорбуюче-кумулятивні властивості ядер).

Ключові слова: ЛОР-хворі, клініко-морфологічний аналіз, змішана вірусно-бактеріальна інфекція, глотка, гортань, бронхи.

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The article contains the materials on clinico-morphological diagnosis in ENT- patients with mixed viral and bacterial infection. It is specified that the conditions of mixed infection development increase the etiopathogenic effects which makes the disease clinical presentation significantly more severe, its manifestations polymorphous and prolongs its clinical course. The somatic signs typical for infection diseases are supplemented by mental disorders, which show the inversion of personal and volitional properties. The formation of the symptom complex effects the organism in a whole against a background of structural and functional changes of its organs (pharynx, larynx, bronchi) which can have both specific and unspecific character. It is interesting that dominating are the signs of morphologic changes, which have been traditionally treated as virogenic (nucleus-to-cytoplasm ratio, non-stable sorption ability of cytoplasm, sorption and cumulation ability of nuclei).

Key words: ENT- patients, clinico-morphological analysis, mixed viral and bacterial infection, pharynx, larynx, bron