MESOTHELIOMA REVISITED

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Summary. Presented herein is a review of the literature on mesothelioma, namely: etiology, pathological anatomy, diagnosis, treatment, and prognosis.

Key words: *mesothelioma, mesothelium, tumor*

Mesothelioma (synonyms: malignant tumor from serous lining cells, malignant epithelioma of the serosa, carcinomatous endothelioma, carcinosarcoma, lymphangioendothelioma, primary cancer, sarcomatous endothelioma, celomic cancer, celothelioma, endothelial cancer, endothelioma) is a relatively rare neoplasm derived from the mesothelium covering serous lining of the peritoneum, pericardium, pleura and testicular membranes.

Mesothelioma most commonly affects the pleura (0.07-0.47% of all autopsies) and the peritoneum (0.002-0.2%), less frequently – the pericardium (0.0001-0.02%), and much less frequently – the testicular membranes. It is encountered predominantly in old age, with certain prevalence in males, however also occurring in young adults and even children [11, 30]. According to own findings, peritoneal mesothelioma as the primary cause of death has been estimated to account for 0.072% amongst a total of 1.387 post-mortem examinations of adult patients of our General Somatic Hospital over the last 21 years [33].

Recent years have witnessed a considerable increase in the mesothelioma-related morbidity rate in the majority of countries, with the peak incidence being expected for 2010–2022, which is explained by continuing industrialization of the society [4, 13, 22, 23]. The incidence of and mortality from mesothelioma are especially high in smokers. Amongst carcinogenic factors primarily contributing to the onset of mesothelioma are asbestos, manganese, iron oxide, zeolite, chrysotile, sterigmatocystin, salts of nickel, beryllium, silicon, ionizing radiation, tuberculosis, organic substances (polyurethane, polysilicone and others) [1, 3, 27, 30]. Presently, a considerable role in the development of mesothelioma is assigned to viral

etiology, with the Simian virus 40 being isolated in 47-83% of human mesotheliomas, yet the currently available epidemiological evidence seems insufficient to duly evaluate the impact of this virus on the increased incidence of mesothelioma in the second half of the last century [6, 7]. The risk group typically comprises plumbers, gas-works employer, and builders.

Clinically and morphologically, mesotheliomas can be classified as either benign or malignant [10]. Macroscopically they are subdivided into nodal (localized) and diffuse (disseminated) forms, while histologically and according to the WHO International Classification [14] there are distinguished epithelial-like, fibrous (spindle-cell), and mixed types, whose microscopic patterns are extremely variable, manifesting themselves by the appearance of papillary, solid, alveolar, glandular (tubular), cystic, myxomatous, fibrous, sarcoma-like and angioma-like structures [12, 24].

The most frequently occurring amongst histological variants of mesothelioma is an epithelium-like form manifesting itself in a plurality of papillae with gentle webbed proliferations covered with prismatic, cuboidal or polygonal cells, as if budding off from each other with a light and vacuolated cytoplasm with signs of cellular polymosphism, hyperchromatosis of the nuclei, the presence of pathological mitoses and gigantic cells, which, in our opinion, is a pathognomonic morphological sign of mesothelioma and according to which one cannot err in differential diagnosis thereof [31]. Mesotheliomas metastasize to the lymph nodes, liver, kidneys, lungs, heart, thyroid, adrenal glands, skin, soft tissue, bones, and brain [8, 18].

The clinical course depends on localization of the tumorous substrate. Diagnosis of mesothelioma is imperfect, being typically too delayed, and it is not by chance that this tumor remains enigmatic for the oncologist. The accurate diagnosis is made at best at pathomorphological examination of the tumor removed, and at the worst – at post-mortem examination. Diagnosis includes a combination of clinical, roentgenological, laboratory and instrumental methods [20]. Specialists have recently been using immunochemical markers, in particular, their attention has been drawn by the calcium-bound protein (calretinin) as a specific marker of benign and malignant mesothelial cells [15, 17].

Mesothelioma is currently considered an incurable tumor [9]. It is only at early stages that the disease may be managed by the currently devised therapeutic approaches comprising neoadjuvant therapy with cytokines [25]. Surgery is only possible at early stages of the disease [2, 16]. Irradiation is mainly employed with the palliative purposes [5]. Diffuse mesotheliomas are recommended to be treated comprehensively [21]. Beside combined treatment, novel methods include gene therapy and immunotherapy [19, 29]. It is necessary to improve therapeutic methods in order to decrease the recurrence rate and improve the prognosis.

The prognosis in mesothelioma is typically unfavourable, however more encouraging outcomes are observed in combined chemotherapy [28]. The average life expectancy of the patients varies within the range from 8 to 25 months, irre-

spective of the method of treatment [26]. The outcomes are not related to age, general condition, degree of weight loss, histological type of the tumor, blood platelet count, or the stage of the disease [32].

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