ALZHEIMER’S DISEASE: ETIOLOGY, DIAGNOSIS, STAGES OF THE COURSE AND PREVENTION

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Summary. Numerous scientific studies show that Alzheimer’s disease (AD) is the most common neurodegenerative disease [1]. Despite the huge amount of knowledge accumulated over the past two decades about the biological basis of the disease, its etiology remains unknown. The main initial symptom of AD is memory loss. As the disease progresses, there take place dementia, changes in personality and behavior. During the final stages, patients are not able to perform even the simplest tasks, and they are completely dependent on caregivers. The diagnosis of AD is based on the recommendations of the National Institute on Aging-Alzheimer’s Association workgroups on diagnostic guidelines for AD [1, 2]. Differential diagnosis of AD should be established with vascular dementia, dementia with Lewy bodies, and other diseases that cause dementia. Patient care is very important as well as the treatment of other AD symptoms and coexistent diseases.

Keywords: Alzheimer’s disease, diagnostics, clinical features, dementia, etiology, treatment

Relevance. Alzheimer’s disease (synonymous with Alzheimer’s type dementia) has been recognized by the World Health Organization as one of the most pressing medical problems in the world. Despite the huge amount of knowledge accumulated over the past two decades about the biological basis of the disease, its etiology remains unknown. No radical treatment for Alzheimer’s dementia has yet been found.

The purpose of the study. Consider possible hypotheses of the etiology of this disease, the stages of the course, diagnosis, the possibility of adaptation of patients in modern society and the proposed preventive measures, to find out the awareness of others about this common disease.

Materials and methods. To achieve the goals, statistical data were used, as well as an analysis of specialized medical domestic and foreign literature [3].
**Results.** Neurodegenerative diseases are one of the largest modern medical and social problems. According to experts from the World Health Organization, Alzheimer's disease is the most common cause of dementia in old and old age – it accounts for 60-70% of all cases. According to WHO estimates, more than 55 million people suffer from dementia worldwide, it is expected that by 2030 this figure will rise to 78 million, and by 2050 – to 139 million [2, 4].

According to scientific studies, the risk of developing AD in women is significantly higher than in men (8.1% of women and 5.4% of men over 65), mainly due to the higher average life expectancy of women compared to men.

In general, the etiology of Alzheimer's disease is unspecified and has sporadic cases of the disease. It manifests itself at the age of over 65 years. Up to 10-15% of cases are hereditary with an early onset, less than 65 years of age, also associated with genetic mutations.

There is an autosomal dominant form of the disease, which manifests itself before old age and is associated with mutations in genes that code for the synthesis of amyloid precursor proteins, namely presenilin I and II [4, 5].

Risk factors such as diabetes, hypertension, dyslipidemia, and smoking can increase the risk of Alzheimer's disease. There are tendencies that treatment of these factors in middle age reduces the development of cognitive impairments in the future. Associations with metal exposure and hormonal changes have not been established.

Clinically, there are several stages of development. Early stage: often goes unnoticed, due to the fact that it develops gradually. This stage is characterized by: disorientation in a previously familiar area, forgetfulness, loss of track of time.

Middle stage: symptoms become more pronounced as the disease progresses. It includes: disorientation at home, forgetfulness of names of people, as well as recent events, difficulties in communication, behavioral difficulties such as repeating the same questions, aimlessly wandering around the street, and this person already needs help in taking care of himself.

Late stage: At this stage, a person is passive and almost completely dependent on others. Significant memory impairment, physical signs and symptoms become apparent. Symptoms include: complete loss of orientation in time and space, difficulty in recognizing friends and relatives, behavioral changes, including aggressiveness, difficulty in movement, as well as a great need for help in caring for oneself.

In terms of diagnosis, Alzheimer's disease is similar to other types of dementia, but despite the specific laboratory and clinical characteristics, the diagnosis can only be confirmed by histology of the brain tissue. Previously, it is necessary to collect an anamnesis and conduct a neurological examination. Obtaining the criteria makes it possible with an accuracy of up to 85% to make the correct diagnosis and differentiate from other types of dementia.

Diagnostic criteria include the following items: impairments found in 2 or more cognitive domains; Clinically established dementia, which is confirmed by mental status studies; there is no impairment of consciousness; has a gradual onset, as well as the progression of memory impairment, in conjunction with other cognitive impairments; onset less often after 40, more often after 65 years; no history of brain diseases, as well as systemic disorders.
There are also biomarkers of the pathophysiological process of Alzheimer’s disease. These include: lowering the level of beta-amyloid in the cerebrospinal fluid; detection of deposits of beta-amyloids in the brain.

Other causes of dementia and disorders that aggravate symptoms are also identified, for this purpose, the level of TSH, cobalamin, as well as neuroimaging methods such as MRI or CT are determined. Brain scans may indicate diffuse cortical and / or cerebral atrophy.

Optimal organization of care for patients with Alzheimer’s disease should include several important areas: early diagnosis of the initial stage of the disease; pathogenetically grounded drug therapy; social rehabilitation; special care for patients using various types of psychotherapeutic effects and memory training; socio-economic, psychotherapeutic and medical support for caregivers.

In the course of a social survey of the awareness of others about this disease, 100 people from the city of Mariupol took part [3]. Of these, 64 are women and 36 are men aged 23 to 71 years (average age 48.7). Persons with medical education – 17 people. As a result, we received the following data: 68% – respondents who are not familiar with the existence of this disease; 32% are people with an understanding of Alzheimer’s disease.

Conclusion: In recent years, numerous studies have been carried out around the world with the aim of improving the diagnosis of Alzheimer’s disease, finding new treatments and ways to prevent the development of the disease. In most cases, Alzheimer’s disease begins after the age of 65, at the same time, 10% of people have forms with an early onset of the disease (up to 65 years). According to various sources, the prevalence of Alzheimer’s disease ranges from 200 to 1600 people per 100 thousand of the population and directly depends on the average life expectancy of people in this region [6]. The main symptom of the onset of Alzheimer’s disease is difficulty in remembering recently acquired information (impaired short-term memory). As the disease progresses, dementia develops, thinking and behavior are impaired. As a consequence, health systems around the world should introduce annual brain screening for people over 50, fueled by advances in biomarker science, with the ability to promote risk reduction strategies [4, 5]. More accurate measurement and recording of diagnoses is urgently needed. Accuracy of diagnosis is the key to treatment, care and support, health system preparedness and overcoming this problem. We need to prepare for a tsunami of demand for health services resulting from an aging global population, improved diagnostics, including biomarkers, and new pharmacological therapies. Treatment of concomitant diseases (atherosclerosis, arterial hypertension, heart disease, diabetes mellitus and other diseases) and symptoms (depression, behavioral disturbances, psychosis, etc.) is important here.

References:

