THE ROLE OF EXTERNAL FACTORS IN THE PROGRESSION OF ARTICULAR SYNDROME IN RHEUMATOID ARTHRITIS

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INTRODUCTION

Rheumatoid arthritis (RA) represents one of the most significant medical and social problems in modern rheumatology. According to global statistics, the prevalence of RA is 10 million cases, with 50-55% of patients becoming disabled within the first five years of disease onset. The epidemiological characteristics of RA demonstrate substantial variability depending on the geographical and ecological features of the region of residence.

Aim of the study. To evaluate the impact of environmental factors in various regions of Uzbekistan on the nature and severity of joint syndrome in patients with rheumatoid arthritis.

Materials and methods. The study included 360 patients with a confirmed diagnosis of RA (mean age 52.6±9.3 years, disease duration 7.5±4.6 years). Participants were stratified by geographical region as follows: zone I (northern region) - Tashkent city (n=119); zone II (western region) - Khorezm region (n=85); zone III (eastern region) - Namangan region (n=79); zone IV (southern region) - Surkhandarya region (n=75).

To assess the relationship between environmental factors and the progression of RA, methods of variance and correlation analysis were employed. Integral indicators of negative environmental impact were used: air pollution index (ψ, psi), water pollution index (σ, sigma), and soil pollution index (ω, omega). These indicators were compared with the quantitative and clinical characteristics of the examined patients (parameter F) and integral criteria of the ecological state of the analyzed regions of Uzbekistan (parameter G).

Results. According to current understanding, toxic substances enter the human body not only directly through air and water, but also indirectly - through plant and animal products contaminated from soil. Soil microelements determine the mineral composition of plants and animal tissues, acting as a biogeochemical factor. Consequently, the mineral and chemical composition of soil has a positive or negative impact on metabolic processes in the human body, influencing the course of various pathological conditions, including RA.The results of the dispersion analysis demonstrated that the content of nickel, fluorine, and aluminum in soil, as well as the concentration of sulfates among toxic trace elements in the living areas of RA patients, have a statistically significant influence on the G parameter. Significant direct correlations were established between the G indicator and the levels of nickel ($r=0.69$; $p<0.05$), fluorine ($r=0.77$; $p<0.05$), and aluminum ($r=0.71$; $p<0.05$) in soil, while an inverse correlation was found with zinc concentration ($r=-0.66$; $p<0.01$).

According to one-factor dispersion analysis, the integral indicator of soil contamination with nickel affects the radiological stage of the disease, as well as the Ritchie and Larsen indices. It should be noted that there is a significant correlation between the

values of ω and the characteristics of the articular syndrome, while the localization of joint damage is associated with an increased content of aluminum in the soil.

In conditions of high soil salinity (ω at G›2, characteristic of region II), there is a pronounced correlation with tenosynovitis (r=0.84; p=0.033), ligamentosis (r=0.97), Baker's cyst (r=0.77; p=0.054), and Hoffa's fat pad (r=0.91; p=0.023). These results indicate that an increase in soil salinity is associated with the exacerbation of anatomical defects in joint structures. At the same time, no statistically significant relationship was established between the characteristics of articular syndrome in RA and the content of sulfates and phosphates in drinking water (parameter F, p›0.05).

Conclusion. The obtained data indicate the significant role of unfavorable environmental factors in the region of residence in the accelerated development of articular syndrome in rheumatoid arthritis (RA), its aggressiveness, and radiological progression. The accumulation of nickel and aluminum in the soil contributes to the activation of mechanisms for early destruction of joint structures, while a high degree of soil salinity exacerbates anatomical defects, and zinc deficiency leads to a decrease in the functional activity of the joints.