RISK FACTORS AND CLUSTER ANALYSIS OF ONYCHOMYCOSIS

*Marko Stalević[1,2], Aleksandra Ignjatović[3,4], Marina Randjelović[4,5],
Suzana Otašević[4,5]*

Recently, there has been a trend of identifying different disease phenotypes based on clinical parameters. Cluster analysis is a statistical method for categorizing different clinical signs and symptoms based on how closely associated they are.

The aim of this study was to estimate whether cluster analysis could be used to classify distinct clinical phenotypes of onychomycosis and determine risk factors for this infection.

This prospective study evaluated data from the specially designed questionnaire for superficial fungal infections of the skin and adnexa. The questionnaire was composed of three separate groups of questions, including demographic data, symptoms and clinical signs and risk factors. The hierarchical method of cluster analysis, the Ward method with Euclidian distance, was used in statistical analysis.

The applied statistical method separated patients into two clusters based on clinical presentation. The first cluster consisted of patients with onychomycosis of toenails accompanied by pain, complete destruction of the nail plate, involvement of 2/3 of the nail, and nail thickening greater than 2 mm. The second cluster, consisting of patients with onychomycosis of fingernails, was further divided into two subclusters. The first one included patients with lesions of the nail root, inside of the nail, superficial changes, and infected skin around the nail. The other subcluster included nail plate thickening of up to 1 mm, changes of the free edge, involvement of up to 1/3, and brittleness of the nail. The most common risk factors are obesity (50%), positive family anamnesis (32.0%), nail plate trauma (15.0%), and long-term antibiotic therapy.

Phenotyping the infection and considering it alongside the most prevalent risk factors for onychomycosis can significantly improve predictive assessment and diagnosis.

Acta Medica Medianae 2023;62(4): 29-36.

Key words: *cluster analysis, onychomycosis, risk factors*