

Abstract

Title: Ascariasis and its relationship with selected psycho-neurological symptoms among children and adults in Poland.

Glistnica i jej związek z wybranymi objawami psychiatrycznymi i neurologicznymi wśród dzieci i dorosłych w Polsce.

Authors: Gras-Ozimek J1, Ozimek W1, Kozińska U3, Gras-Graupera M2, Kozińska E3, Bar A4

1Centrum Dr Ozimek

2Gras Clinical Services & Research

3Non-public Health Care Clinic “SANO” in Rzeszów

4The British School Warsaw

Background: Ascariasis is considered a public health problem mostly in tropical countries and thus studies are realized usually in those countries and particularly in children. As a result, there are limitations in the current literature that associate ascariasis with neurological disorders or psychomotor disturbances.

Aim: The objective of this study was to prove our hypothesis that ascariasis in children and adults is related to selected psycho-neurological symptoms such as hyperactivity, tic disorders and nail biting (onychophagia). The study was conducted in the Polish cities of Warsaw and Rzeszów but the patients were drawn from across the country.

Material and methods: This study included a total of 465 Poles aged between 1 and 80 years old of both sexes divided into one case group and one control group. The association between the presence of ascariasis and the apparition of selected symptoms was presented within the group containing all subjects and according to gender (males and females) and age (children and adults). The study was conducted in Warsaw and Rzeszów between 2016 and 2018. Data were collected using external laboratories for stool analysis to determine the presence of *Ascaris lumbricoides* eggs, and a special questionnaire designed to determine the presence of the selected symptoms: hyperactivity, onychophagia and tic disorders. The Mann–Whitney U test was then used to determine differences between groups.

Results: We have demonstrated that people with ascariasis showed a higher incidence of all the examined symptoms compared to the results obtained in the control group. Here we report that people infected with *Ascaris lumbricoides* are more likely to present hyperactivity, onychophagia and tic disorders. Most of the studied symptoms were more intense among women and children.

Conclusions: Our findings suggest that *Ascaris lumbricoides* infestation may be associated with neurological, psychiatric or motor disorders. The confirmation of the influence of *Ascaris lumbricoides* on psychomotor disorders requires further study. Nevertheless, it should already be considered a potential cause of hyperactivity, onychophagia and tic disorders. Further study is required to explain the specific mechanisms.

Keywords: *Ascaris lumbricoides*, tic disorders, onychophagia, hyperactivity, parasitology