Risk factors associated to Candida albicans infections

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INTRODUCTION:

Candida albicans species was first described by Christine Marie Berkhout, in her doctoral thesis, supported in 1923 at Utrecht University. Candida currently includes over 150 species, only 6 being considered as having medical importance, C. albicans being the most significant. It is believed that currently the main source of Candida sp. is the person carrying commensal strains in the oral cavity, intestinal tract and vagina, sites where it develops usually as a commensal yeast, becoming pathogenic under conditions of immunodeficiency. Other sources of Candida sp. are represented by the external environment, the hands of health personnel; parenteral nutrition; intravascular devices; contaminated eye solutions; food, the transmission to receptors being indirect. Increased costs necessary to resolve an episode of candidiasis and the fact that disseminated fungal infections increase mortality have attracted the attention of the worldwide medical community, initiating discussions to find solutions for a more effective prevention of these infections, especially in the current context of the acute need for an effective health system. Receptivity to candidiasis is generally being increased in the case of immunodeficiency of different origins, and various risk factors may be associated with the production of candidiasis.

RESEARCH AIM:

This study aims to investigate the high risk behavior in the appearance of candidiasis infection, which modified or removed could improve prevention and by default the decrease in cost for this disease in the municipality of Brașov.

RESEARCH OBJECTIVES:

The main objective is the assessment of risk factors associated with vaginal and oral candidomycotic infections, in ambulatory patients, and secondary objectives consist of the issuance of case definitions for candidomycotic infections entered in the study, assessment of sensitivity and specificity of the defined case, tracking the frequency of manifestation of infection with Candida sp. for a period of 1 year (2006) and based on patients' personal characteristics (age, income, education), the comorbidity (diabetes, HIV infection, ulcers, asthma, alcoholism, neoplasms), or the intervention of factors favoring the disease (food, antibiotherapy, corticotherapy or previous smoking, alcohol consumption, poor hygiene).

MATERIAL AND METHOD:

To establish lots of patients to be interviewed about potential risk factors involved in the appearance of vaginal or oral candidiasis infection, which is the main objective of the paper, in the first part we follow a definition of our own case. To develop the definition of our own case, we have initiated a study in which we included people who had the disease or not (109 individuals in oral candidiasis and 112 cases for vaginal location), people were selected based on clinical criteria (specific locales, oral and vaginal), epidemiological and laboratory. We used questionnaires that were distributed to 7 different
dispensaries in the districts of Brasov and the level of ambulatory specialty County Hospital Emergency Clinic of Brasov and private clinics. Patients were randomly chosen. During the study, every third person that was referred to the medical services mentioned above was selected. The study started with the training of the personnel in the criteria for patients' selection and how to complete the questionnaire. Following the survey, people who fit the case definition for oral and vaginal candidiasis were referred for confirmation of the etiological diagnosis in the laboratory. Measured values of the sensitivity of 90% and over and positive predictive values of over 97% have allowed quite accurate identification of people with the disease and those without the disease, in this case-control study. The questionnaire was used as a means of dividing the two groups (patients with or without the disease), based on case definition and the collection of data on risk factors associated with candidomycotic infection. In the second part, for the analysis of risk factors associated with the 2 candidomycotic sites, we initiated a case-control study retrospectively on a sample of 1004 people, for the two sites, vaginal and oral, which was conducted by the questionnaire for which the validity has been demonstrated. The sample was divided into patients (263 cases for oral candidiosis and 239 cases for vaginal candidiosis) and a control group of people with unconfirmed candidomycotic infection (263 records of oral candidiasis and 239 cases of vaginal candidiasis), investigated the risk factors (related to the host, food and living environment) based on an existing questionnaire. The differences between the 2 groups is expressed in terms of odds ratio = probability of a group with a particular disease or exposure, compared with the other group.

CONCLUSIONS:

For oral candidiasis the daily consumption of milk, pastry, antibiotherapy, recent hospitalization, consumption of sweets, cheese, pasta and blood group "O" have been shown to increase the risk of infection compared to the control group. OR values of around 3 means that smoking, some comorbidity (diabetes, HIV infection, ulcers, asthma, neoplasm), poor oral hygiene, increase 3 times the risk of oral candidiasis compared to persons who are not exposed to these factors. The corticotherapy, the consumption of bread and alcohol are risk factors for which of the low odds ratio (1-2)were obtained, so the risk of the disease is insignificant. The consumption of fresh fruit and yogurt has a protective role (OR value lower than 1). In vaginal candidiasis infection, multiple sexual partners, antibioticcotherapy, poor education levels in people that graduated lower than 8 grades, inadequate hygiene, blood group A, associated diseases, especially diabetes mellitus have been shown to increase the risk of infection compared with the control group. Multiple hospitalizations, frequent consumption of pastry products, sweets, milk and cheese, wearing tight or synthetic lingerie, smoking, with OR values around 3-5 mean that these factors increase by 3-5 times the risk to persons exposed to the factors mentioned above compared with those in the control group. Risk factors for which low odds ratio (1-2) were obtained increased insignificantly the risk of disease: the use of oral contraceptives, the consumption of pasta, very low income and steady consumption of alcohol. Consumption of yogurt, fruit, bread and the corticotherapy could be considered indifferent or protective factors for vaginal candidiasis. The study of association between exposure and disease is a very important step to assess factors that may contribute to the appearance of a disease, in order to prevent these diseases.