

# Pathogenesis and Clinical Presentation of Throat Candidiasis in Durrës area, Albania

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## ABSTRACT

Candidiasis, commonly called yeast infection or thrush, is a fungal infection of any of the *Candida spp.*, of which *Candida albicans* is probably the most common. In most individuals, *C. albicans* is a member of the normal human microbiome, resides as a lifelong, harmless commensal. Under certain circumstances, however, *C. albicans* can cause infections that range from superficial infections of the skin to In this study, 1317 throat samples were examined. These samples were received by the Microbiology Laboratory of DRSH, Durrës, Albania, collected between April 2012 and December 2013. It resulted that 372 out of 1317 samples were infected by *C. albicans* throat infections.

The infection was mostly prevalent in women, 63% out of all positive results.

The age group most affected were 76-90 years old and 46-60 years old.

We found this infection highly prevalent in autumn with 26% of positive results.

## INTRODUCTION

*Candida albicans* is one such microorganism, which is normally found as a commensal on host epithelial surfaces, colonizing more than 50% of individuals. <sup>1</sup> *C. albicans* is a commensal organism found on the human mucosal surface and is generally harmless in healthy individuals <sup>6,4</sup>

In healthy individuals this colonization generally remains benign. However, mildly immunocompromised individuals can frequently suffer from recalcitrant infections of the oral cavity. These oral infections with *Candida spp.* are termed "oral candidiasis" (OC)<sup>5</sup> Such infections are predominantly caused by *C. albicans* and can affect the oropharynx and/or the esophagus of persons with dysfunctions of the adaptive immune system. Nowadays, a large variety of *Candida spp.* identification methods are available, and they differ in principles, discrimination power and cost.

Traditional microbiological procedures are based on macroscopic and microscopic analysis of colonies and cells presumptive tests <sup>3</sup>

Serological tests: Tests like enzyme linked immunosorbent assay (ELISA) and radio immuno assay (RIA) for detection of candidial antigen, either cell-wall mannan or cytoplasmic constituents are available <sup>2</sup>

Molecular methods: In previous studies, we have found that multiplex PCR is an accurate, rather inexpensive, and easy to perform techniques for identification of *C. albicans* and some other species

## RESULTS AND DISCUSSION

A total of 1317 individuals suspectit for *Candida albicans* throat infections were analysed in our study. The yeast isolates were received from the Microbiology Laboratory of DRSH, Durrës, Albania. The samples were taken from patients of different sex types, of different age groups, and in different seasons, in the period of time between April 2012 to December 2013.

945 (72%) out of 1317 analysed samples were negative and 372 (28%) were positive (chart 1)

768 (58%) out of 1317 samples were females and 549 (42%) were males. (chart 2)

Regarding to the dynamic spread based on sex, women are more affected by *C. albicans* throat infections than men. From the total number of 372 positive cases, 235 (63%) were females, and 137 (37%) were males. (chart 3)

From 370 samples taken in spring, 268 (72%) were negative and 102 (28%) were positive. From 338 samples taken in summer, 243 (72%) were negative and 95 (28%) were positive. From 382 samples taken in autumn, 268 (70%) were negative and 114 (30%) were positive. From 227 samples taken in winter, 166 (73%) were negative and 61 (27%) were positive. (chart 4)

From 464 samples taken from patients 1-15 years old, 376 (81%) were negative and 88 (19%) were positive. From 227 samples taken from patients 16-30 years old, 184 (81%) were negative and 43 (19%) were positive. From 136 samples taken from patients 31-45 years old, 99 (73%) were negative and 37 (27%) were positive. From 172 samples taken from patients 46-60 years old, 102 (59%) were negative and 70 (41%) were positive. From 267 samples taken from 61-75 years old, 158 (59%) were negative and 109 (41%) were positive. From 51 samples taken from 76-90 years old, 26 (51%) were negative and 25 (49%) were positive. (chart 5)

THE NUMBER OF ANALYSED SAMPLES

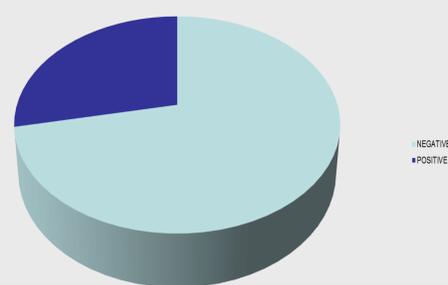


Chart 1. The ratio of positive and negative cases included in the study.

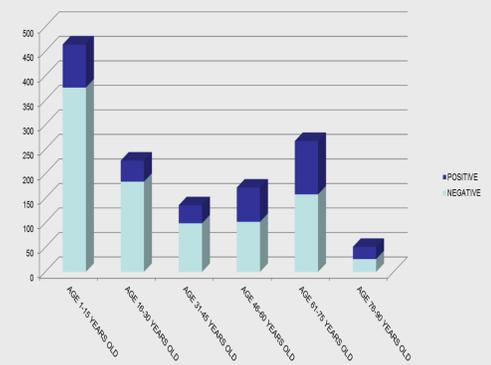


Chart 5. The dynamic spread of *C. albicans* throat infections based on the different age groups

## METHODS AND MATERIALS

In our study we have analyzed 1317 people, in the Microbiology Laboratory of DRSH, Durrës, Albania, suspected for *C. albicans* throat infections. Individuals we analysed were females and males, of different age groups, for the period of time between April 2012 and December 2013.

First we got the throat samples from patients who came in the Laboratory. After we got the samples, we analysed them, to detect if they are positive to *C. albicans* throat infections or not. The method we used is the traditional microbiological procedure, which is based on morphology criteria for identification *C. albicans*. We inoculated the samples into Sabouraud's Dextrose Agar media (SDA). We use SDA media because it allows the growth of *Candida* and inhibits the growth of commensal oral bacteria.

The sample was streaked using inoculating loop and incubated in 37°C for 48 hours. Identification of *C. albicans* is made by examination in microscope The growth appeared in 48 hours as cream/white colored, smooth and pasty colonies.

For statistical processing of the results we used MegaStat statistical program.

CASES NUMBER

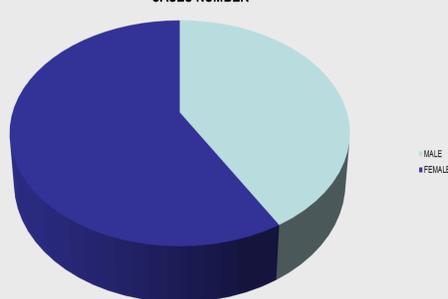


Chart 2. The ratio of female and male samples included in the study

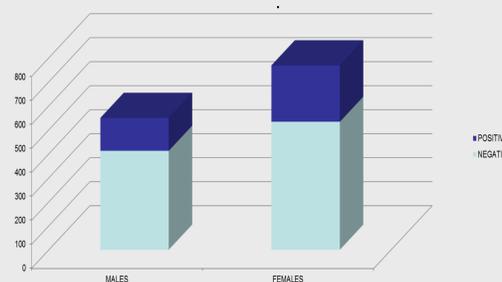


Chart 3. The dynamic spread of *C. albicans* throat infections based on sex differences.

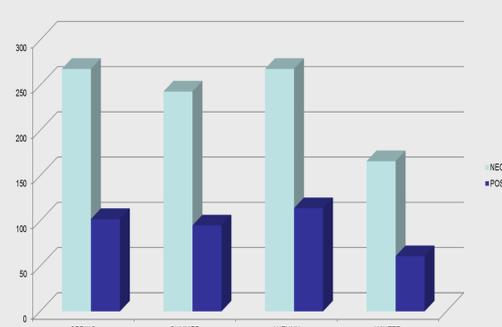


Chart 4. The dynamic spread of *C. albicans* throat infections, based on the different seasons

## CONCLUSIONS

In our study resulted that women are more affected by *C. albicans* throat infections than men.

*C. albicans* throat infections are more widespread in autumn, 31%, and less in winter, 16% ( $p > 0.05$ )

The age group most effected by *C. albicans* throat infections is 76-90 years old and the less one is 1-15 years old, but  $p < 0.05$ . This is probably because the number of samples belonging to the age group 76-90 years in our study is too small to matter, only 3.8% of the total number of samples. If this age group do not consider therefore that highlighted, then in our study the age group most affected by *C. albicans* is the one over 46 years old. ( $p > 0.05$ )

## REFERENCES

1. Brown GD, Denning DW, Gow NA, Netea MG, White T (2012) Human fungal infections: The Hidden Killers. *Sci Transl Med* 4: 165rv113.
2. D. Aubert, D. Puygauthier-Toubas, P. Leon et al., "Characterization of specific anti-Candida IgM, IgA and IgE: diagnostic value in deep-seated infections," *Mycoses*, vol. 39, no. 5-6, pp. 169-176, 1996. View at Scopus
3. Liguori G, Lucariello A, Colella G, et al. Rapid identification of *Candida* species in oral rinse solutions by PCR *J Clin Microbiol* 2007;60: 1035-9
4. Pluto K., Hila N., Shkurti R., et al (2013) Oral, Intestinal and Vaginal Candidiasis, Pathogenesis and Clinical Presentation in Elbasan (Albania) .
5. Ruhnke M. Skin and mucous membrane infections. In: Calderone RA, ed. *Candida and Candidiasis*: ASM Press, Washington, DC, pp. 307-325., 2002.
6. Yang YL, Leaw SN, Wang AH, Chen HT, Cheng WT, et al. (2011) Characterization of yeasts colonizing in healthy individuals. *Medical Mycology* 49: 103-106

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