

Presented papers

1. A project on Vulvovaginal Candidiasis (VVC) among female patients attending the Central STD clinic Colombo, for the first time.

Jayasekera P.I, Perera P.D, Samarakoon S.

Oral presentation at the Annual Scientific Sessions of the Sri Lanka College of Microbiologists 2010.

Vulvovaginal Candidiasis among female patients attending the Central STD Clinic Colombo, for the first time.

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Objectives

- To determine the proportion of VVC among female attendees, the different species of Candida that causes VVC and their antifungal-susceptibility pattern.
- To compare the signs and symptoms among patients and others.

Design, setting and methods

This was a descriptive cross-sectional study. Data was collected by an interviewer-administered questionnaire. Two swabs were taken from the vaginal wall during speculum examination from 96 females who visited the clinic from January to March 2007.

Wet mount and culture were done. Isolates from women who were symptomatic with moderate-heavy growths in culture were processed further. Speciation was done by germ tube test, rice-agar plate test and sugar-assimilation test while AFST with standard agar-diffusion method.

Data analysis was done manually.

Results

8.33% had VVC and none had concurrent STIs.

Signs and symptoms of VVC can be similar to many STIs, some non-venereal diseases and in normal women.

75% of the isolates were *Candida albicans*, 25% were *Candida tropicalis*. All *C.albicans* isolates and the two *C.tropicalis* isolates were sensitive to Fluconazole, Itraconazole, Clotrimazole & Nystatin. One *C.albicans* isolate and one *C.tropicalis* were intermediately-sensitive to Miconazole. Both *C.tropicalis* and one *C.albicans* isolates were resistant to Econazole.

Conclusion

The proportion of VVC among women attending the STD clinic for the first time is 8.33%. Symptoms & signs of VVC are not specific to diagnose VVC. Many of the isolates were *C.albicans* while proportion of *C. tropicalis* still remains low.

2. A ten year retrospective study to evaluate the species of candida in blood cultures received at Department of Mycology, Medical Research Institute.

Perera P.D, Jayasekera P.I.

Poster presentation at the Annual Scientific Sessions of the Sri Lanka College of Microbiologists 2011.

A ten year retrospective study to evaluate the species of Candida in blood cultures received at Department of Mycology, Medical Research Institute.

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Introduction

Department of Mycology, Medical Research Institute being the main diagnostic and reference laboratory for fungi, receives a large number of blood cultures for identification of fungi. *Candida albicans* was the commonest species isolated, but now the change in the spectrum of isolates is a concern, as treatment is difficult. Studies done in other countries reveal this trend of change.

Objectives

- To determine the species of candida, isolated in blood from 2001-2010
- To determine the changing pattern of species during the 10 years

Methodology

3137 blood samples were received during this time period. Specimens were processed using Sabouraud's Dextrose Agar supplemented with antibiotics. The species identified was plotted against time.

Results

Out of 3137 samples fungal aetiological agents were identified in 392 samples (12.49 % isolation rate). Among the 392 positive samples 366 samples yielded candida species (93.6 %). *Candida tropicalis* was the commonest species isolated (187/366 – 51.09 %). 124 samples yielded *Candida glabrata* (33.87 %). There were

Candida albicans (40), *Candida parapsilosis* (08), *Candida guilliermondii* (03), *Candida famata* (01), *Candida lusitanae* (01) and speciation not done (02) isolates.

Conclusion

Candida tropicalis and *Candida glabrata* show higher isolation rates than *Candida albicans* in contrast to the past few decades. Uncommon species such as *Candida guilliermondi*, *Candida famata* and *Candida lusitania* were isolated in this study.

3. APSMM The burden of serious fungal infections in Sri Lanka.

Primali I. Jayasekera, David W. Denning, P.D. Perera, Amitha Fernando, Sadara Kudavidanage.
Oral presentation at 5th Congress of Asia Pacific Society for Medical Mycology (APSMM 2013) ,
19-20th June Chengdu, China.

<http://www.isham.org/pdf/reportJSMM.pdf>

The burden of serious fungal infections in Sri Lanka

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Objectives

Estimates of fungal infection caseloads are required to plan and implement healthcare policies. Most Sri Lankan health care is free of charge with a few private hospitals. In each district a specialized medical facility is available. With the increase in elderly population and medical developments, increased numbers of those with fungal diseases are expected. This necessitates a new vision for fungal diseases in Sri Lanka, a tropical country with a population of 20 million. We have estimated the national fungal infection caseloads from epidemiological datasets.

Methods

We searched national data available from the Sri Lankan department of census & statistics, Ministry of Health, WHO & Faculty of Medicine, Colombo, as well as surveillance studies published by us and other authors for relevant disease terms. Locally collected incidence data were available for candidaemia, fungal keratitis, cryptococcosis, ABPA& SAFS. Generally, disease estimates were conservative as they assumed the lowest incidence rates reported in the literature and focused only on well-defined risk populations.

Results

Sri Lankan population in 2012 was 20.2 M (51.5% female, 25.5% children). The adult HIV prevalence is <0.1%. In 2009, 1,196 HIV/AIDS persons were detected and 40.6% were on anti-retroviral therapy. There were 16 deaths. Prevalence of all forms of TB was 21,000 (2010). According to TB and other respiratory death rates the prevalence of chronic pulmonary aspergillosis post TB (1,443) and all forms of chronic pulmonary aspergillosis (2,886) were estimated. Annual incidence of cryptococcal meningitis is 13, candidaemia 507 and mucormycosis 41. Based on an AML incidence of 3/100,000 and over 500 renal transplants, we estimated 229 cases of invasive aspergillosis. Based on candidaemia and immunocompromised patients, 76 candida peritonitis, 320 oral candidiasis and 97 oesophageal candidiasis and 25,750 recurrent vaginal candidiasis cases were estimated. Asthma affects 414,000 adults 2.75% of the adult population, and assuming ABPA prevalence is 2.5% 10,344 persons, and 33% of the worst 10% of asthmatics have SAFS 13,654 persons are estimated. Fungal keratitis is documented in 1,277 patients and tinea capitis in 50 children. Pneumocystis incidence could not be estimated. The total estimated serious fungal disease burden in Sri Lanka is 56,687.

Conclusion

Our estimates suggest that candidaemia and invasive aspergillosis are the leading causes of fungal-associated deaths. Fungal related morbidity is mainly attributed to SAFS, ABPA and CPA. More precise data from the whole country is needed for healthcare policymaking.

4. The burden of serious fungal infections in Sri Lanka.

Primali I. Jayasekera, David W. Denning, P.D. Perera, Amitha Fernando, Sadara Kudavidanage.
Poster presentation at 6th Trends in Medical Mycology, 11-14th October 2013 Copenhagen,
Denmark.

<http://www.life-worldwide.org/assets/uploads/files/Sri%20LankaposterTIMM.pdf>

<http://onlinelibrary.wiley.com/doi/10.1111/myc.12124/pdf> -P134

5. A ten year retrospective study to evaluate the fungal pathogens isolated from skin, hair & nail samples received at Department of Mycology, Medical Research Institute. **Jayasekera Primali I**, Kudavidanage Sadara, Perera P. D.
Poster presentation at the 2nd Annual Conference and Scientific Sessions of Sri Lankan Society for Microbiology (SSM) – 2013.

A ten year retrospective study to evaluate the fungal pathogens isolated from skin, hair & nail samples received at Department of Mycology, Medical Research Institute.

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Introduction

Department of Mycology, Medical Research Institute being the main diagnostic and reference laboratory for fungi in Sri Lanka, receives a large number of scraping (skin, nail and hair) samples for identification of fungi. Dermatophytes were the commonest species isolated, but now the change in the spectrum of isolates is a concern, as treatment is difficult.

Objectives

- To determine the species of fungi, isolated from skin, hair & nail samples from 2003-2012
- To determine the changing pattern of species during the 10 years

Methodology

9402 samples were received during this time period. Specimens were processed using Sabouraud's Dextrose Agar supplemented with antibiotics and cyclohexamide. The fungal species identified morphologically +/- biochemically, were plotted against time.

Results

Out of 9402 samples, fungal aetiological agents were identified in 4788 samples (50.92 % isolation rate). Among the 4788 positive isolates, 2100 isolates were molds while 2775 isolates were yeasts. Few samples yielded more than one isolate.

Among the molds, the highest number of isolates belongs to *Fusarium* sp. followed by *Aspergillus* sp. and dermatophytes. Among the yeasts, the most common isolate is *Candida tropicalis*.

Fusarium sp. and *Candida* sp. show higher isolation rates than dermatophytes. Over the past decade, most commonly isolated dermatophytes have isolated in very low numbers and it was steady. The number of *Candida tropicalis* isolates has increased over the years while *Candida glabrata* has had an increase and then a decline. *Fusarium* sp. has increased in number.

Conclusion

Fusarium sp. was the most commonly isolated mold during the past decade and *Candida tropicalis* was the most commonly isolated yeast species. Dermatophytes were less commonly isolated compared to other fungal species.

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6. Identification of fungi in bat guano in Peradeniya, Sri Lanka.

Kudagammana HDWS, Thevanesam V, Wijedasa MH, **Jayasekera PI.**

Oral presentation at the 2nd Annual Conference and Scientific Sessions of Sri Lankan Society for Microbiology (SSM) – 2013.

Identification of fungi in bat guano in Peradeniya, Sri Lanka

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Bats are recognized as a major reservoir of a number of microorganisms causing serious human diseases. Characteristics of bats, including their dietary habits, high population density, long life span, ability for long distance travel, and seasonal migration make them extremely suitable as hosts for many human pathogens including fungi. The current study was undertaken to identify *Cryptococcus neoformans* and *Histoplasma capsulatum* in bat guano at the Botanical Gardens, Peradeniya.

Two hundred and eighteen samples of freshly produced bat guano was collected and processed immediately. Sterile saline and 25% antibiotic (gentamicin and penicillin) were added to samples. The contents were vortexed and the supernatant was inoculated onto two Sabouraud's Dextrose Agar slants with Chloramphenicol. One bottle was incubated at 37° C and the other at room temperature (25° C) separately for a maximum of four weeks.

Yields were observed macroscopically and microscopically for *Histoplasma* spp. and *C. neoformans* specifically, and for other fungi. Yeast isolated which were microscopically circular with budding cells, were subjected to urease test to confirm as *C. neoformans*.

From the 218 bat guano samples that incubated at 25° C, 213 slants grew fungi and only 5 (2.29%) were negative. Some grew more than one isolate (33/218) to total of 256 isolates. Of that 188 (73.44%) isolates were yeasts morphologically. Forty seven isolates were microscopically circular in shape but none of them were *Cryptococcus* spp. biochemically. From the 218 bat guano samples incubated at 37° C showed total of 209 isolates (including 17 samples that grew more than one isolate) and 27 (12.38%) slants were negative. Out of 209, 177 isolates were yeasts, morphologically. Forty isolates were microscopically circular in shape and all were negative biochemically. No *Histoplasma* spp. was isolated at both temperatures. At both temperatures molds such as *Aspergillus* spp. *Mucor* spp. *Fusarium* spp. *Penicillium* spp. grew with some other unidentified molds.

Though the samples were negative for *Cryptococcus* spp. and *Histoplasma* spp. further studies are needed with bigger sample and sampling should be done throughout the year to eliminate environmental changes as well as to eliminate dietary pattern variations in bats. A higher sensitivity may be achieved by using selective growth media separately for each organism.

Key words: *Cryptococcus* spp., *Histoplasma* spp. bat guano, Peradeniya, Sri Lanka

Dissertations

Vulvovaginal Candidiasis among female patients attending the Central STD Clinic Colombo, for the first time.

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Introduction

This study was a descriptive cross-sectional study on vulvovaginal candidiasis (VVC) among women attending the Central STD Clinic in Sri Lanka for the first time.

Objectives

- To determine the proportion of VVC among female STD patients attending the Central STD Clinic for the first time.
- To compare the signs and symptoms among patients with VVC and other attendees.
- To determine the different species of candida that causes VVC.
- To determine the antifungal susceptibility pattern.

Methodology

Data collection

This study involved 96 participants who visited the Central STD Clinic Colombo from January to March 2007, for the first time. Data was collected by using an interviewer-administered questionnaire and by taking two swabs from the lateral vaginal wall from each attendee during the speculum examination.

Laboratory procedure

From one swab, wet mount was prepared using 10% KOH and other swab was used for culture. Isolates from women who were symptomatic with heavy growth or moderate growth in the culture were processed further. Speciation was done by using germ-tube test, rice-agar plate test and carbon assimilation test. Antifungal susceptibility was done using the standard agar diffusion method developed by using Neo-sensitab antifungals and modified Shadomy agar.

Data analysis

Data analysis was done manually.

Results

The proportion of VVC among women attending the central STD clinic for the first time was 8.33%, (8/96). None of these patients had concurrent STIs.

Symptoms of VVC can be similar to the presenting complaints of an array of STIs & some non venereal diseases.

Signs of VVC can be seen in other STIs and also in normal women without any STI.

Seventy five percent of the isolates were *Candida albicans* while 25% were *Candida tropicalis*. All *Candida albicans* isolates and the two *Candida tropicalis* isolates were sensitive to Fluconazole, Itraconazole, Clotrimazole & Nystatin. One *Candida albicans* isolate was intermediately sensitive to Miconazole and was resistant to Econazole. Of the *Candida tropicalis* isolates one was intermediately sensitive to Miconazole & resistant to Econazole, while the other was resistant only to Econazole.

Conclusion

The proportion of VVC among women attending the STD clinic for the first time is 8.33%. Symptoms & signs of VVC are not specific to diagnose VVC. Many of the isolates were *Candida albicans* and the proportion of *Candida tropicalis* still remains low.