

Cutaneous Zygomycosis by Syncephalastrum Recemosum: A Case Report.

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Abstract: Cutaneous wound infection due to zygomycosis (mucormycosis) is an uncommon presentation. We report a case of Syncephalastrum recemosum in an immunocompetent male after a Post Achilles Tendon repair. The patient was successfully treated with I.V. Amphotericin B (liposomal) and a meticulous aseptic dressing.

Key words: Cutaneous Zygomycosis, Syncephalastrum recemosum, immunocompetent, I.V. Amphotericin B (liposomal).

Date of Submission: 16-12-2018

Date of acceptance: 31-12-2018

I. Introduction

Zygomycosis represents a spectrum of uncommon infections. Syncephalastrum recemosum belongs to class Zygomycetes, order Mucorales. These saprophytic fungi are found ubiquitously in the environment. In the past, these fungi were traditionally considered as non pathogenic to humans and were treated as laboratory contaminants¹. In the present days, however, the incidence of infection with these fungi has increased incredibly. Here, we present a case of cutaneous wound infection with this rarely encountered fungi in humans.

II. Case Report

A 45 year old non diabetic male attended the orthopedics out patient department with complaint of left heel pain after he sustained a fall from the staircase of his house, for which he underwent Left Achilles Tendon Repair. The procedure went uneventful and the patient was discharged two days later with a dry healing wound. Upon the review to the hospital after 3 days, the wound showed serous bloody discharge,



Figure 1 : serous bloody discharge from wound

the margins of the wound were raised, slightly elevated having a circinate border. The patient gave history of taking a brisk walk (with non weight bearing support) in his garden to keep himself mobilized in the post operative period. Swabs were collected aseptically from the discharge and sent immediately to the microbiology department. After receiving the swabs in the microbiology department, they were plated aseptically on Blood agar, MacConkey agar and incubated aerobically at 37°C. After 24 hours growth on blood agar was grayish to black,



Figure 2: cottony aerial grey to black mycelia with white background

cottony having aerial mycelia with a white background, in next 24 hours incubation, the fungus turned black in colour occupying the complete area of the petri dish. No other fungal or bacterial growth was seen on the culture plates.



Figure 3: wide aseptate hyphae (40X High Power)

Upon Microscopy, on lactophenol cotton blue dye (l.p.c.b.); Wide hyaline aseptate ribbon shaped hyphae were seen having fruiting bodies resembling *Aspergillus*.

To identify further a slide culture was put up, and examined after 48 hours.



Figure 4 : slide culture

The coverslip was lifted from the surface of the agar block and placed over a clean non greasy slide with a drop of l.p.c.b. dye. Under high power (40x) erect sporangiophores were arising at right angle with a globose columella upon which, characteristically **cylindrical merosporangia** were arranged giving a daisy petal appearance, along with a few rudimentary rhizoids. The fungus with the above characters was identified as ***Syncephalastrum recemosum***.



Figure 5: Cylindrical Merosporangia (Daisy petal appearance (100X Oil Immersion)

Table 1: Distinguishing features between *syncephalastrum sp.* , *Rhizopus sp.* , *Aspergillus sp.*²

Property	<i>Syncephalastrum sp.</i>	<i>Rhizopus sp.</i>	<i>Aspergillus sp.</i>
phylum	Zygomycetes	Zygomycetes	Ascomycetes
Macroscopy: Colony morphology on S.D.A	Cottony , fluffy , white to grey turning black with time	Cottony , fluffy, grey coloured	Powdery green , yellow , black
Microscopy: upon lactophenol cotton blue			
a) Hyphae	Aseptate ,broad , irregular , Rudimentary	Ribbon like aseptate hyphae. Prominent rhizoids	Narrow septate hyphae acute angle branching. No rhizoids
b) Rhizoids			
c) Fruiting bodies	Sporangiophores : erect sporangiophores ending up swollen tip columella, long tubular sporangia , called Merosporangia Chains of 5-10 spores within each merosporangium.	Concave columella single globose sporangium. Spores spherical equal in size	Spherical vesicle , no sporangium. From vesicles narrow extensions called phiallides are seen bearing conidia on their tip.

The fungus being identified as *syncephalastrum recemosum* belonging to zygomycetes , the patient was treated conservatively and started on I.V. Amphotericin B(liposomal) (5mg/kg bodyweight) and for a period of 15 days along with a proper aseptic dressing.



Figure 6: Healthy wound

The patient successfully responded to the treatment with a healthy wound healing.

III. Discussion

Zygomycosis is broadly divided into six types - rhino cerebral, pulmonary, cutaneous, gastrointestinal, disseminated and miscellaneous. ³ cutaneous zygomycosis represents the third most common (19%) form of zygomycosis after rhino-orbito-cerebral (39%) and pulmonary forms (24%) according to a review by Roden et al. ³

Cutaneous zygomycosis is classified as localised when it affects only the skin or subcutaneous tissue; deep extension when it invades muscle, tendons or bone; and disseminated when it involves other non-contiguous organs. ⁴ The cutaneous zygomycosis may be primary by direct inoculation in skin or secondary to dissemination from a distant focus seeding the bloodstream.

Cutaneous zygomycosis may be gradual and slowly progressive or may be aggressive and fulminant leading to necrotizing lesions and haematogenous dissemination. ^{4,5}

Clinical manifestations include necrotic eschar, black discoloration with surrounding oedema; superficial lesions having only slightly elevated circinate and squamous with outer erythematous rim. ^{4,5}

upon culture *syncephalastrum recemosum* shows surface coloration varying from nearly white to various shades of green, olive and grey to almost black. ⁶ The vegetative mycelia are aseptate. Sporulation occurs readily on routine medium at room temperature and at temperatures above 37°C.

The risk factors for zygomycosis include diabetes mellitus, neutropenia, sustained immunosuppressive therapy, chronic steroids use, iron chelation therapy, broad-spectrum antibiotic use, severe malnutrition and primary breakdown in the integrity of the cutaneous barrier such as trauma, surgical wounds, needle sticks or burns. ⁶

Table 2: Infections with *Syncephalastrum recemosum*

S.No.	Study series	Type of infection	Risk factors	Management	Outcome
1	Kamalam et al (1980) ⁷	Cutaneous infection with arteritis	Type 1 Diabetes Mellitus	Unknown	Death
2	Schlebusch et al (2005) ⁸	Abdominal wound infection	Immunocompetant following trauma	Surgical debridement & systemic Amphotericin B	Cure
3	Baradkar V.P. et al (2008) ⁹	Invasive sino orbital infection	Hepatitis B with cirrhosis of liver	Partial surgical resection with Systemic Amphotericin B	Cure
4	Amatya et al (2010) ¹⁰	Onychomycosis	Immunocompetant following trauma	Surgical debridement, nystatin	Cure
5	Mathuram et al (2013) ¹¹	Mycetoma like lesion (dorsum of foot)	Immunocompetant following trauma	No follow up	Unknown
6	Managaraj et al (2014) ¹²	Rhino-orbital-cerebral infection	Type 2 Diabetes Mellitus	Systemic Amphotericin B	Death
7	Baby et al (2015) ²	Sub-cutaneous infection	Type 2 Diabetes Mellitus	Surgical debridement & Systemic Amphotericin B	Cure
8	Rodriguez Gutierrez et al(2016) ¹³	Severe Pneumonia	Non Hodgkins Lymphoma	Surgical resection Systemic Amphotericin B Caspofungin	Cure

A combined approach of prompt diagnosis, with systemic antifungal, surgical debridement, and correction of the underlying condition should be the basis for treatment. ¹⁴ Combination of liposomal amphotericin B with posaconazole or caspofungin has been used in invasive zygomycosis as salvage therapy. ¹⁵ This case throws light on *Syncephalastrum recemosum* being a human pathogen. Aswell, it proves the infection in a immunocompetant adult, unlike the usual group of immunocompromised and diabetic patients where the Zygomycetes infections are commonly observed.

IV. Conclusion

Early diagnosis and immediate management is a cornerstone in treating these infections to decrease the morbidity and mortality. Further, *Syncephalastrum recemosum* closely resembles *Aspergillus* species on microscopy, hence, an accurate identification of the fungus is required for the commencement of the proper treatment as soon as possible.

Acknowledgement

Heart felt thanks to the technicians of the department of Microbiology for their cooperation & a very special thanks to Dr. A. Nanditha for her constant support towards the work.

Conflict of Interest: Authors declare no conflicts of interest.

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Dr. Shumaila Abdul Rehman. "Cutaneous Zygomycosis by *Syncephalastrum Recemosum*: A Case Report." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 17, no. 12, 2018, pp 09-13.