Case Report

A Rare case of Subcutaneous Mycosis due to *Rhizoctonia solani*

Sahu. S[1], Padhy .S[2], Dash.M[3], Mohanty.I[4], Pattnaik.S[5]

Abstract:
Rhizoctonia solani is a very common soil borne pathogen with a great diversity of host plants. A 52 year old lady presented with sole manifestation of subcutaneous swelling over the left leg for 3 months Pus was collected by aspiration revealed septatate fungal hyphae. After culture on SDA at 25 C showed white cottony growth initially, progressed to buff colored to black colonies on further incubation. On LPCB mount we found septate hyphae with acute and right angled branching with out any conidia and hyphal anastomosis which resembled features of Rhizoctonia solani. Patient was put on Fluconazole and responded well to the treatment.

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Introduction:

Rhizoctonia solani (R.solani) is the most commonly identified species of *Rhizoctonia*. It is a soil borne pathogen with a great diversity of host plants. It was described by Julius Kuhn on potato in 1858.It is a basidiomycete fungus that does not produce any asexual spores. In nature, it reproduces asexually and exists primarily as vegetative mycelium and/or sclerotia[1].The vegetative mycelium of *Rhizoctonia solani* are colorless when young but become brown colored as they grow and mature.The key to identify *R.solani* are characteristics of its septate hyphae branching at 90? angles ,constrictions at the base of the hyphal branching sometimes with anastomosis and clear white , darkbrown to black colored colonies on SDA. It can be able to survive for extended periods of time in the absence of living host plants by feeding on decaying organic matter[2].To the best of our knowledge this is the first ever case of human subcutaneous mycosis due to *Rhizoctonia solani* reported from south odisha.

Case report:

A 52 year old female agricultural worker by profession came with a complaint of progressive swelling over the upper part of left leg for the past 3 months .It is a single circular swelling of size 6x5 cm present on the anterior part of the left leg extends up to lower border of patella . It extended medial and lateral compartments slightly.Skin over the swelling was normal without any inflammatory signs.No visible veins,pulsations ,sinus or any discharge from the swelling were seen .On palpation there was no local
rise of temperature ,no tenderness and skin over the swelling was pinchable. All the borders were well defined and it was soft in consistency. There was no restricted joint mobility.

There was a history of trauma while working in the paddy field.On general examination all the vitals were normal. She had mild pallor.The patient was diabetic but not hypertensive. Pus was aspitated under aseptic conditions and sent to the department

1. Sahu. S, Senior resident, M.K.C.G Medical college
2. Padhy .S, Assistant professor, M.K.C.G Medical college
3. Dash.M , Assistant professor, M.K.C.G Medical college
4. Mohanty.I , Senior resident, M.K.C.G Medical college
5. Pattnaik.S, Junior resident, M.K.C.G Medical college
Department of Microbiology; M.K.C.G Medical college Berhampur, Odisha, India.

Correspond to: Dr.Susmita Sahu, Department of Microbiology M.K.C.G Medical college, Berhampur Odisha PIN- 760001 e-mail: susmitakumarisahu@gmail.com

of microbiology for examination. It was thick and brown in colour without any odour on gross examination .Gram stain of the pus revealed few number of pus cells with septate hyphae. Basing on the preliminary staining report pus sample was inoculated into SDA (Sabourauds dextrose agar) slants incubated at 25?C and 37?C . After 5 days of incubation at 25?C cottony white growth was appeared which later turned tan to black colored starting from the periphery of the media. On further incubation.The whole colony turned dark black coloured .The reverse side showed white to grey colour LPCB mount of the colony showed septate hyphae without conidia.The hyphae showed right angled branching hyphae at some places fused together to form anastomosis .This was identified as *Rhizoctonia solani* basing on above features.Patient was put on oral Fluconazole and the whole pus was drained. The patient was discharged with advice for follow up in out patient department.

Discussion:

Rhizoctonia solani belongs to the Phylum Basidiomycota,class Agaricomycetes, order Cantharellales,Family ceratobasidiaceae and genus *Rhizoctonia*[2] .It usually exists in nature as vegetative mycelium and does not produce any asexual spores. It consists of hyphae partitioned into individual cells by septum containing small pore through which movement of cytoplasm, mitochondria and nuclei from cell to cell occurs.The hyphae branch often branch at a 90^0 angles and usually possess more than three nuclei per hyphal cells. The branched hyphae is sometimes slightly constricted at the origin.They produce sclerotia which are resistant to variation in environmental conditions. These above features differentiate *R.solani* from other *Rhizoctonia* fungi. *R.solani* grows on potato dextrose agar and forms grey to black colored colonies at the temperature range of $18\text{-}28^0$ .Sclerotia are produced on the surface of cultures after 4 to 6 six weeks of incubation[2].

In 1969, J.R Parmeter and his colleagues reintroduced the concept of 'hyphal anastomosis' to characterize and identify *Rhizoctonia*.This includes that the isolates of *Rhizoctonia* which have the ability to recognize and fuse with each other are genetically related,where as isolates that do not have this ability are genetically unrelated[3,4].This hyphal anastomosis criteria have been extensively used to place isolates of *Rhizoctonia* into taxonomically distinct groups .It is grouped into 13 anastomosis groups (AG) that vary in pathogenecity,physical characsteristics and sequence variations[5]. It is the method of genetic recombination in *Rhizoctonia.*

It causes wide range of commercially significant plant diseases ,but reports of human diseases caused by it are very rare[6]. Till now two cases of human mycosis due *Rhizoctonium solani* causing Keratitis[7] and extensive mycosis[2] were reported.

In this case the patient was a agricultural field worker and gave the history of trauma while working in the field.This might be the cause of infection by penetration of soil pathogen through the injury.Also the patient is a known diabetic which helped the pathogen to grow at the site of injury. To conclude ,*R.solani* is a well known plant pathogen and very rarely causes human infection.This case was reported because of its rarity.

Figure-1: Subcutaneous swelling on left leg.

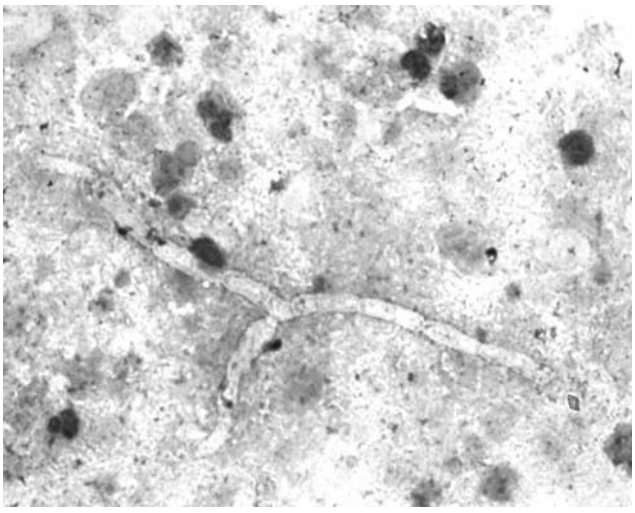

Figure-2: Gram staining of pus sample showed septate branched hyphae

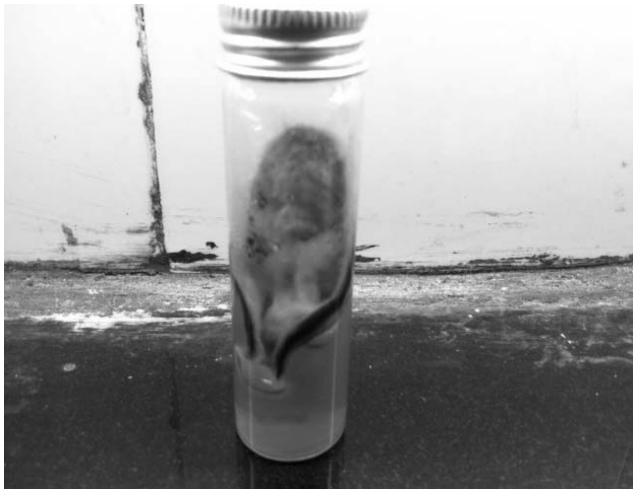

Figure-3: Growth of Rhizoctonia after 12 days on SDA agar.

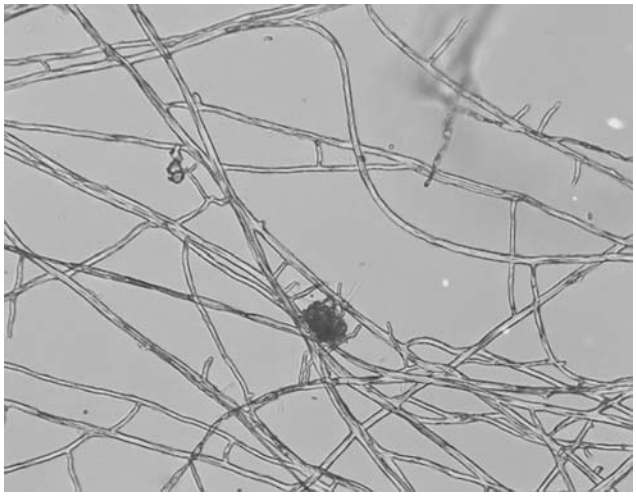

Figure-3: Fig 4 LPCB mount from slide culture showing right anglebranching and anastomosis

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