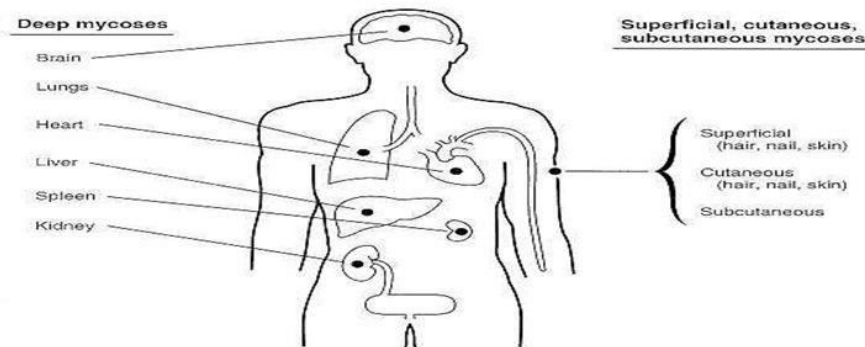


Subcutaneous Mycosis

Mycoses: diseases cause by fungi

- Superficial
 - Subcutaneous
 - Opportunistic
- Cutaneous
Systemic

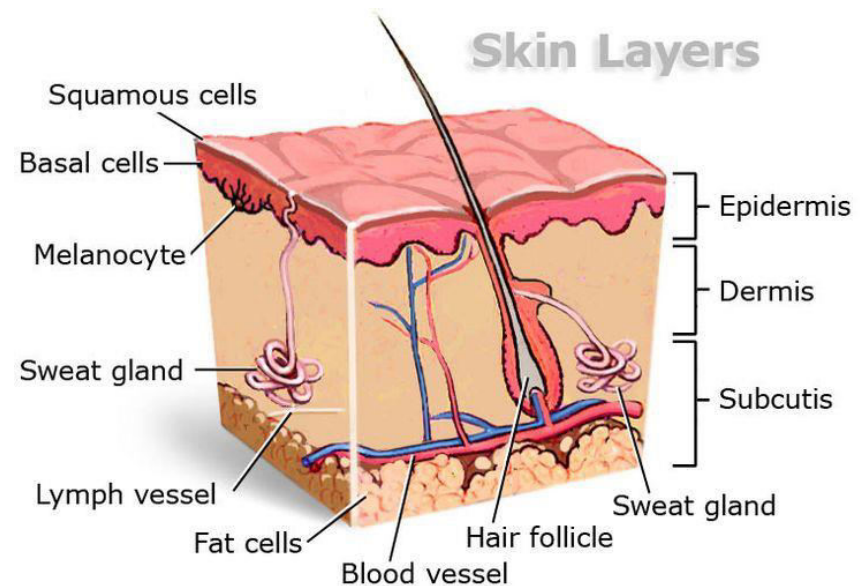


Fungal infections

1. **Superficial mycosis.**
2. **Coetaneous mycosis: Dermatophytoses.**
3. **Subcutaneous mycosis.**
4. **Systemic mycosis.**
5. **Opportunistic mycosis.**

Subcutaneous mycoses

- Fungal Infections that penetrate the dermis and subcutaneous tissues.
- It's less common than superficial fungal infections



Subcutaneous mycoses

Subcutaneous mycosis include:

1. Chromomycosis
2. Mycetoma (Madura foot)
3. Phaeohyphomycosis

1- Chromomycosis

- it is a subcutaneous fungal infection caused by number of dematiaceous fungi.
- **Etiological agent:**
 - Phialophora verrucosa*
 - Fonsecaea pedrosoi*
 - Exophiala sp.*

1- Chromomycosis

i. Phialophora verrucosa

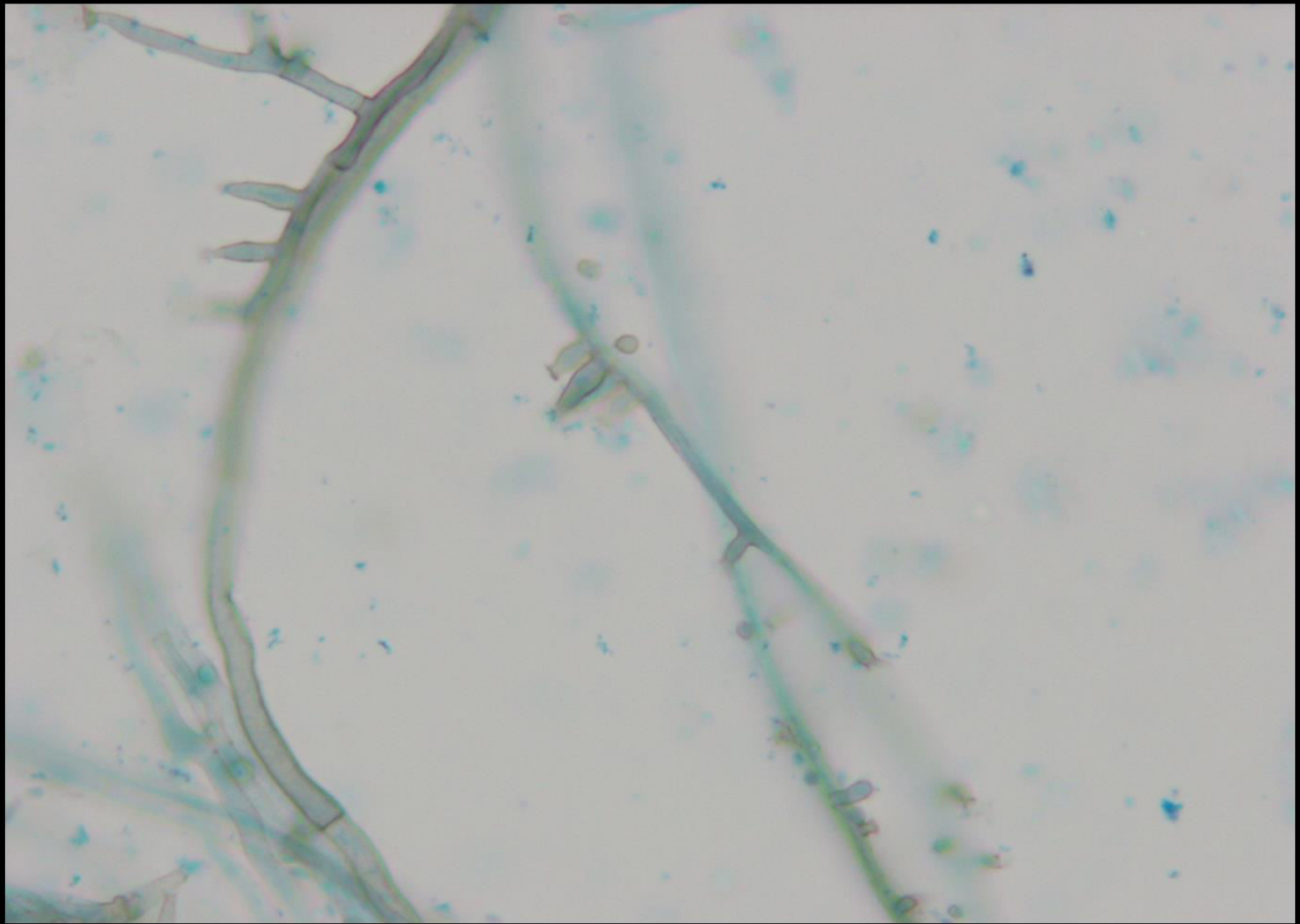
➤ Colony morphology:

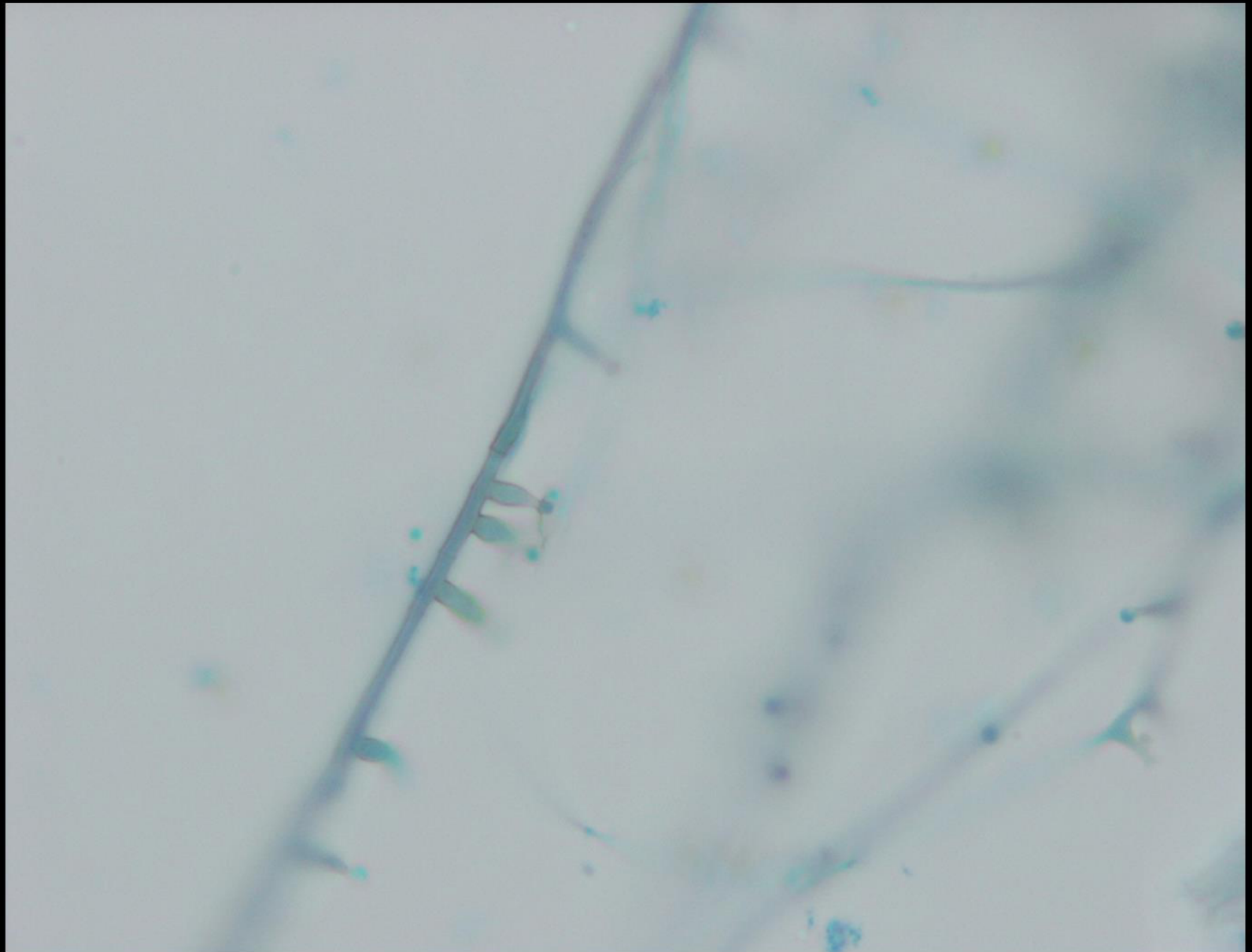
Dark gray or black

➤ Microscopic morphology:

- Brown, branching Septate hyphae.
- Phialides are flask or vase shaped and they are formed laterally or at the tip of hyphae.
- Oval conidia at tip of phialides.







1- Chromomycosis

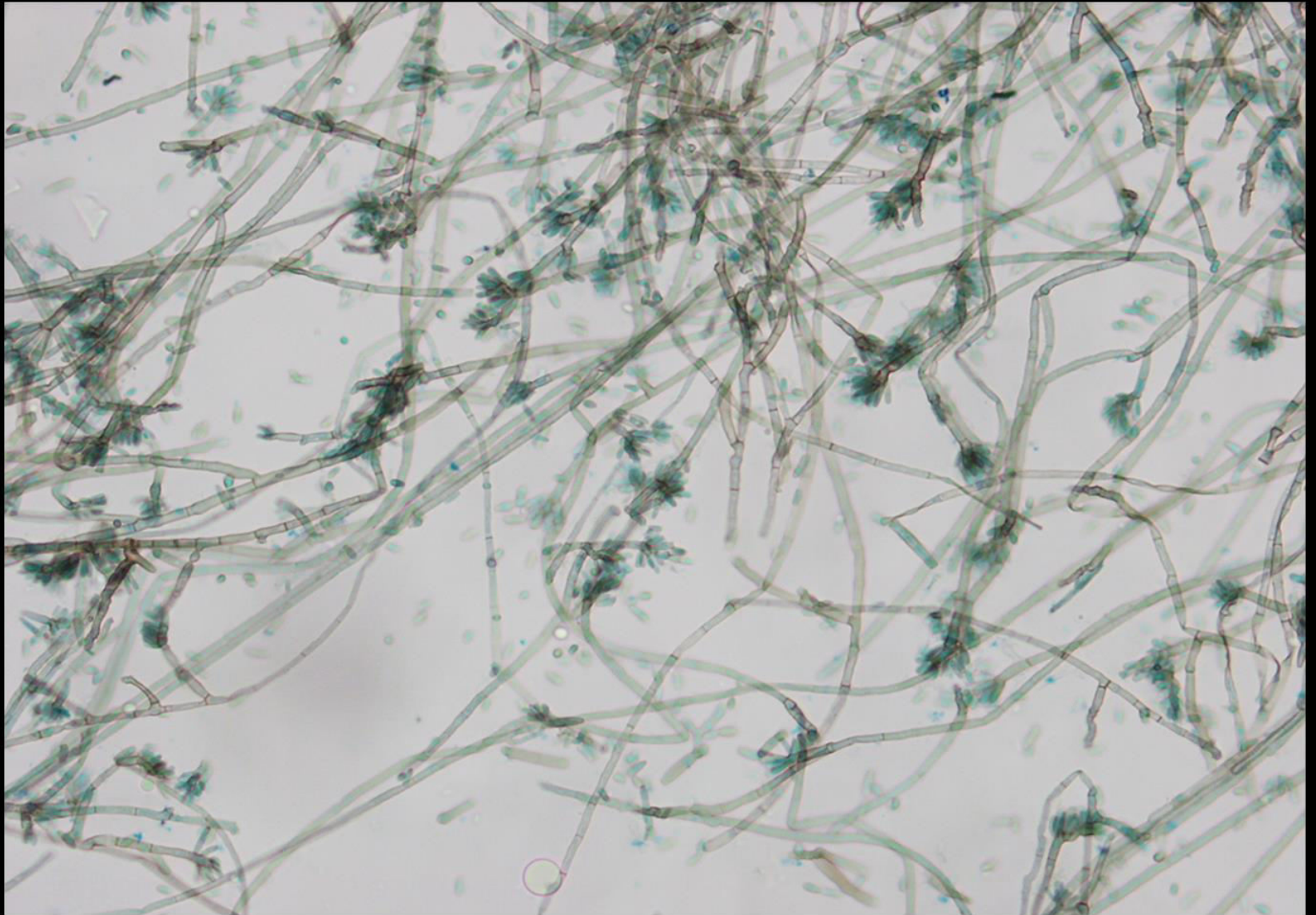
ii. Fonsecaea pedrosoi

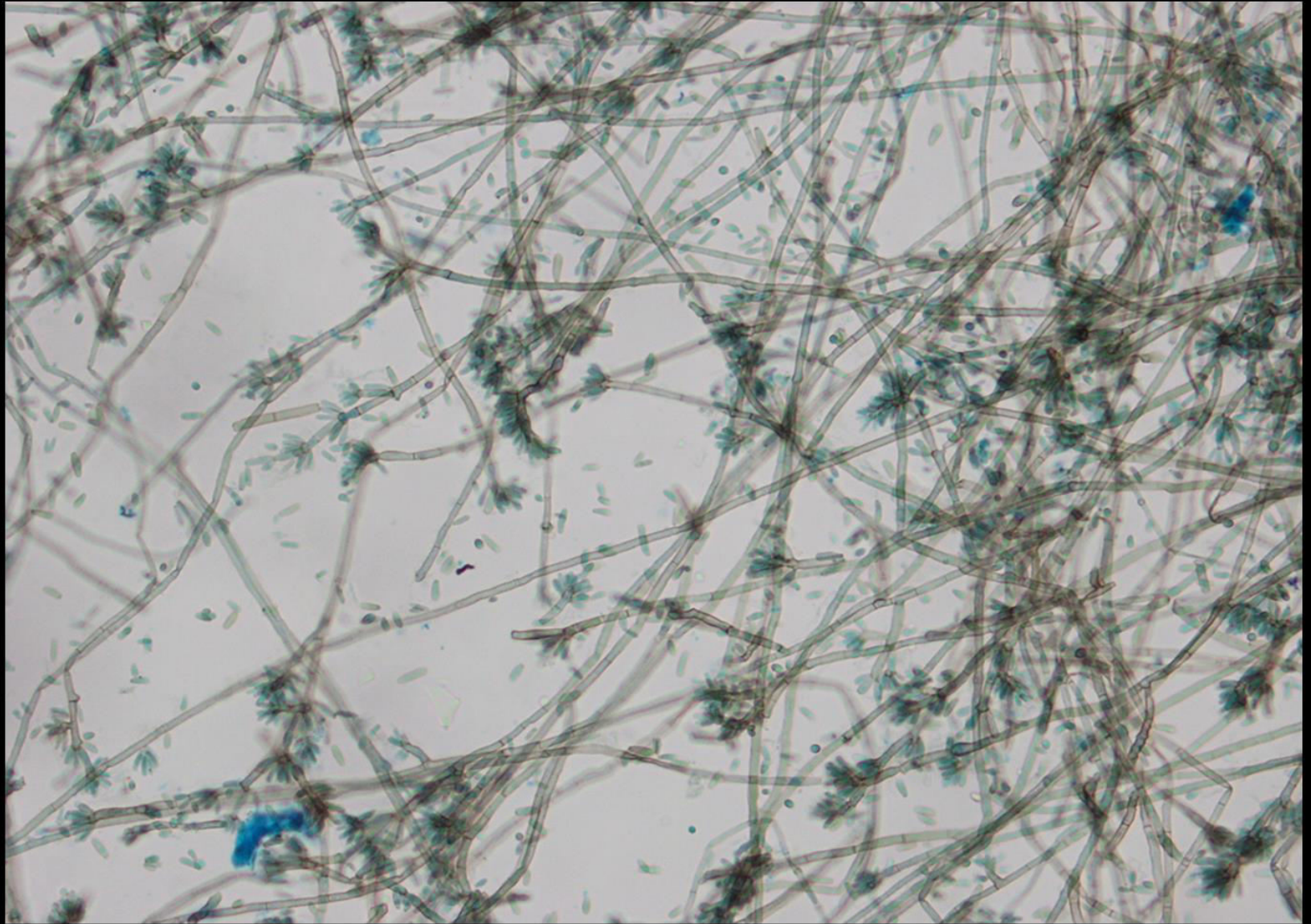
➤ **Colony morphology:**

Dark gray or black.

➤ **Microscopic morphology:**

- Branch ,brown Septate hyphae.
- Conidiophor vary in length .
- Elongated conidia giving flower like or finger like appearance





Laboratory Diagnosis

- **Specimen:** Biopsy tissue.
- **Direct microscopic examination:** stain with 10% KOH will show brown cells with septa.
- **Culture:** on SDA (very slow growing, black colonies).
- **Microscopic examination:** stain with LPCB.

2- Mycetoma

- It is a subcutaneous fungal infection which will cause grain in the infected site.
- Mycetoma can be caused by fungi & bacteria:
 - If mycetoma caused by bacteria (Actinomycetes)>> so mycetoma called **Actinomycetoma**
 - If mycetoma caused by fungi>> so mycetoma called **Eumycetoma**



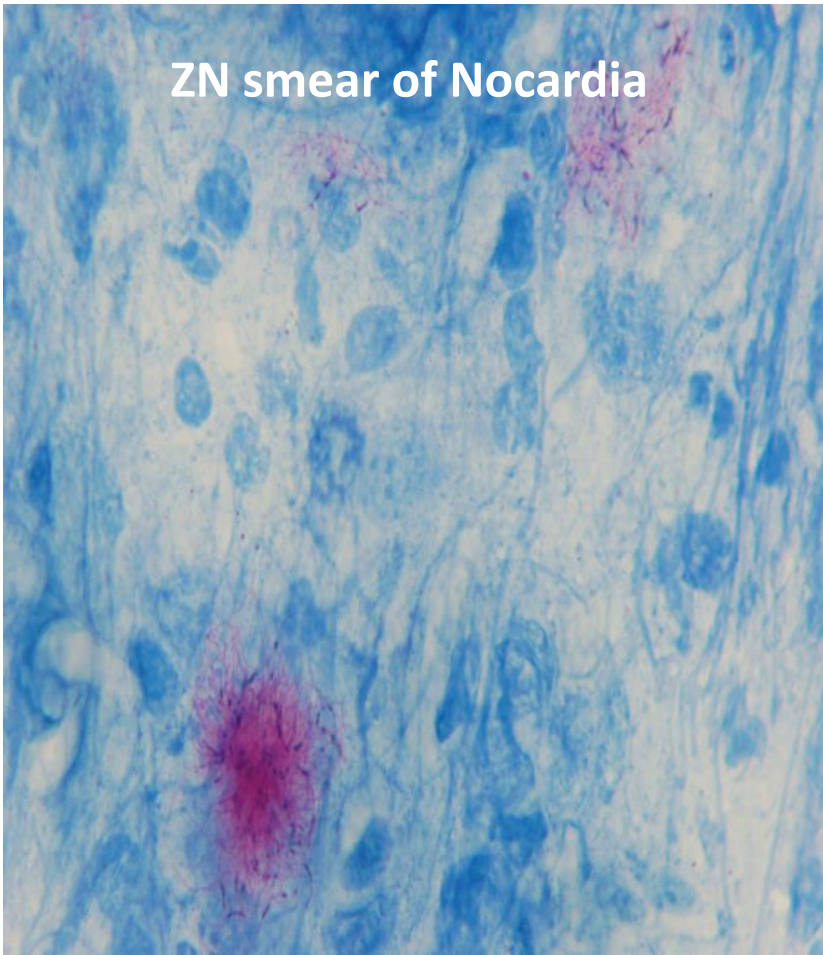
Figure 1: Nodules on the palm

Actinomycetoma

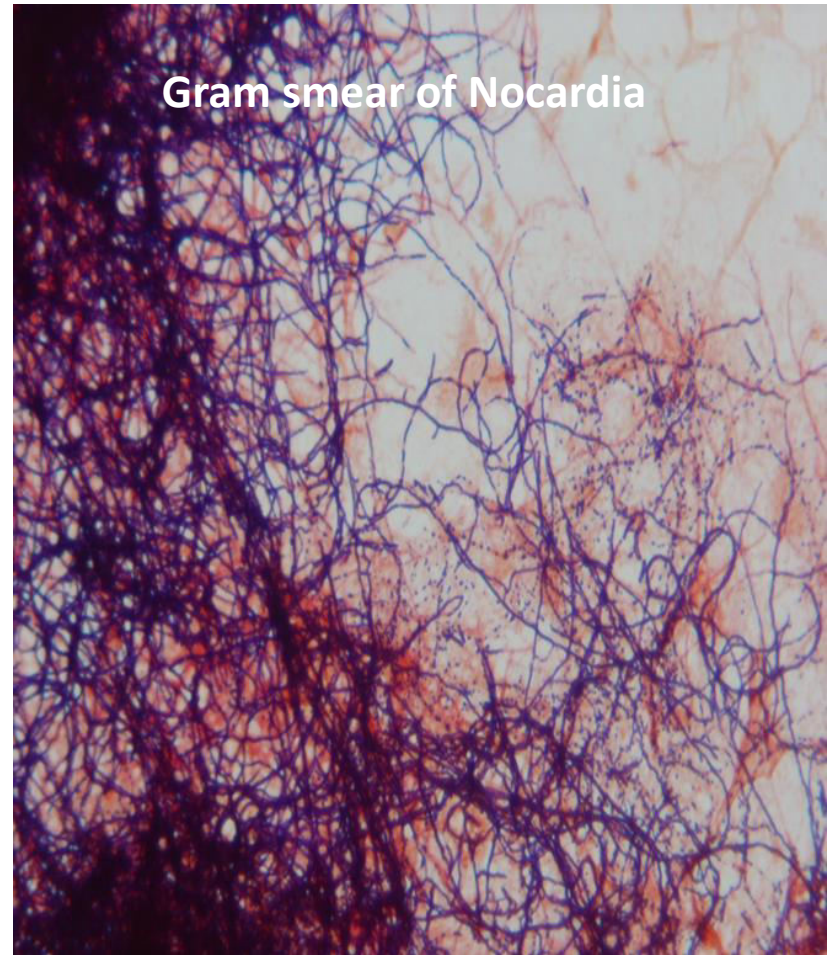
- It's mycetoma caused by Actinomycetes.
- **Actinomycetes:**
- gram positive, branching filamentous (bacilli) bacteria.
- **Nocardia:**
- the most common bacteria in Actinomycetes group. It's partially AFB.

Actinomycetes (Nocardia)

ZN smear of Nocardia



Gram smear of Nocardia



Actinomycetoma

Actinomycotic grain:

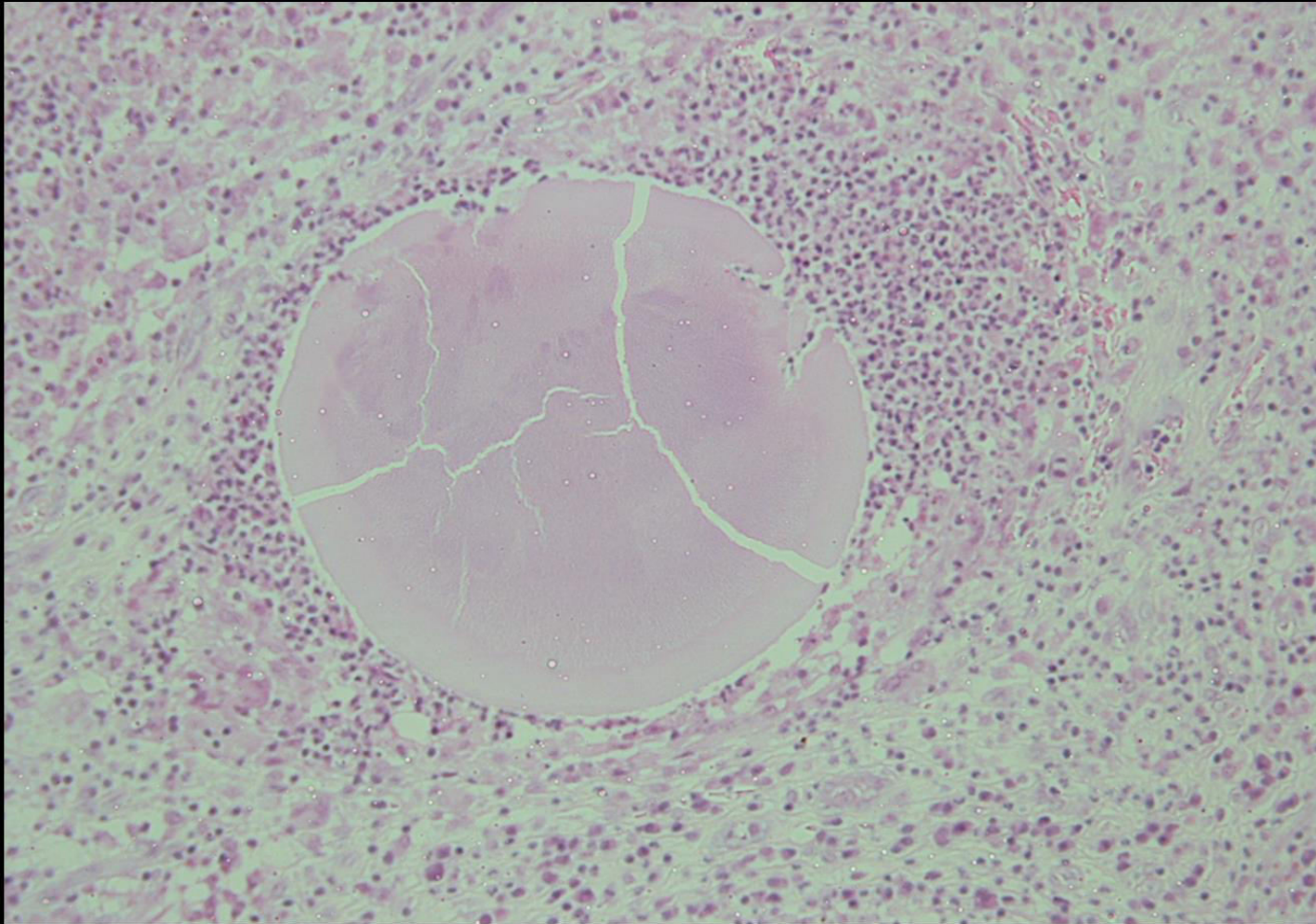
➤ Macroscopic morphology of grain:

White or yellowish color, soft, small in size

➤ Microscopic morphology:

- The grain of Actinomycetes contain fine filaments
- The granules are surrounded by eosinophilic material

Actinomycotic grain



Eumycetoma

- It's mycetoma caused by fungi.

Eumycotic grain:

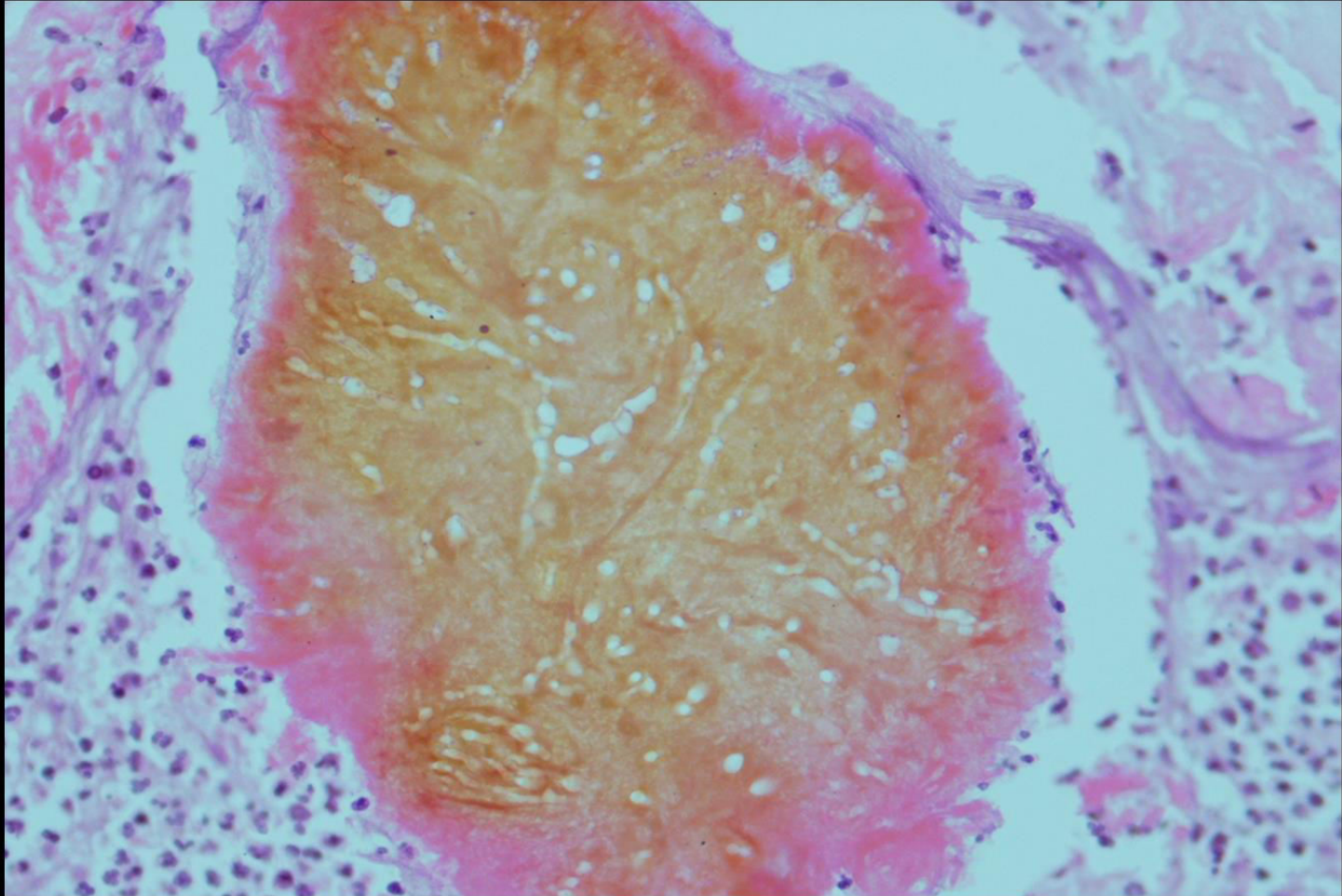
➤ Macroscopic morphology of grain:

Black in color, hard and 1-5mm diameter

➤ Microscopic morphology:

- Fungal grains contain short hyphae which sometimes swollen
- The granules are surrounded by eosinophilic material

Eumycotic grain



Eumycetoma

- **Etiological agent:**
 - Madurella mycetomatis*
 - Monosporium apiospermum*

Eumycetoma

i. Madurella mycetomatis

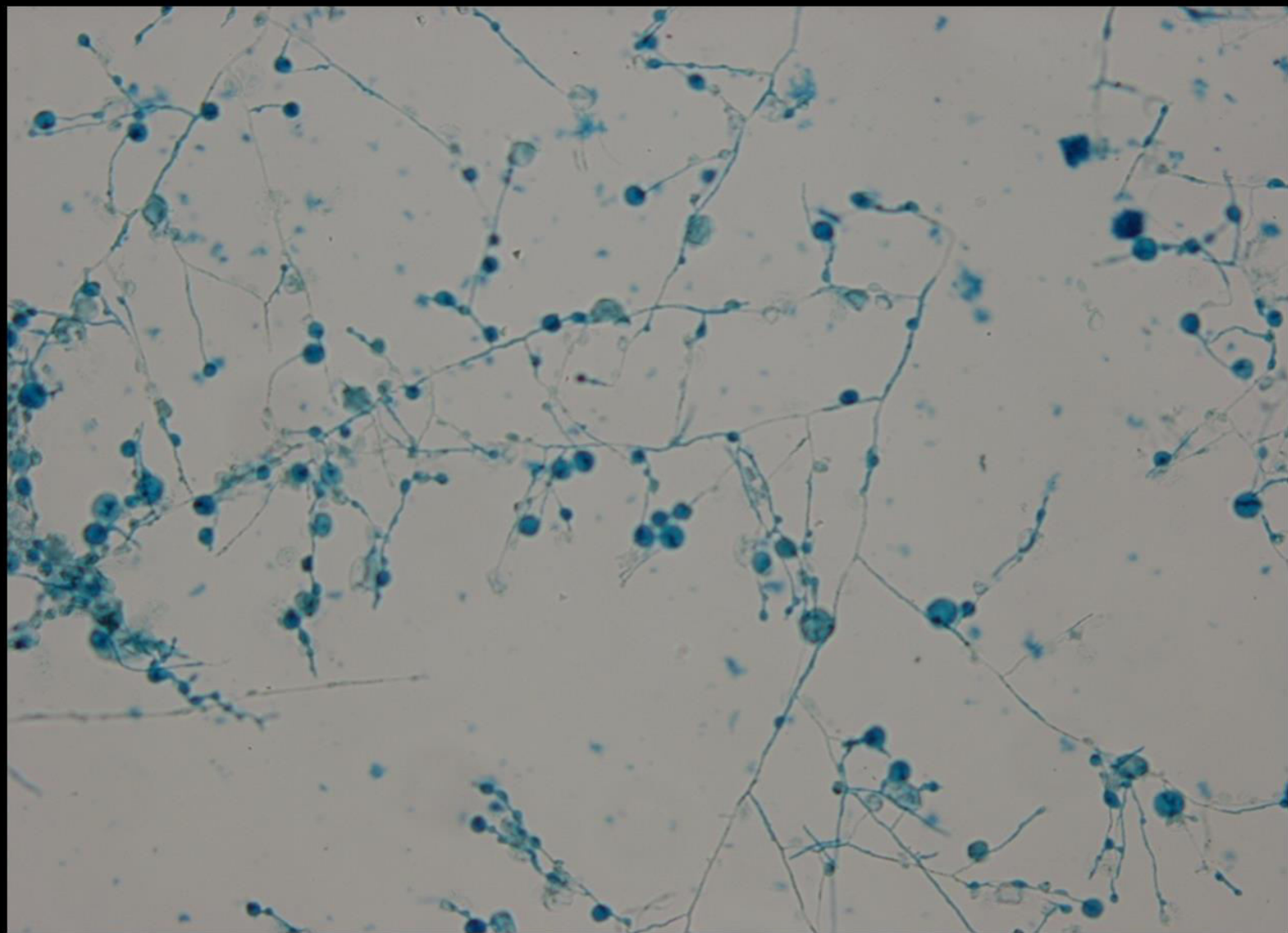
➤ Colony morphology:

- Flat, velvety brownish color
- There's Brown pigment diffuses in the agar.

➤ Microscopic morphology:

Septate hyphae with numerous chlamydospore



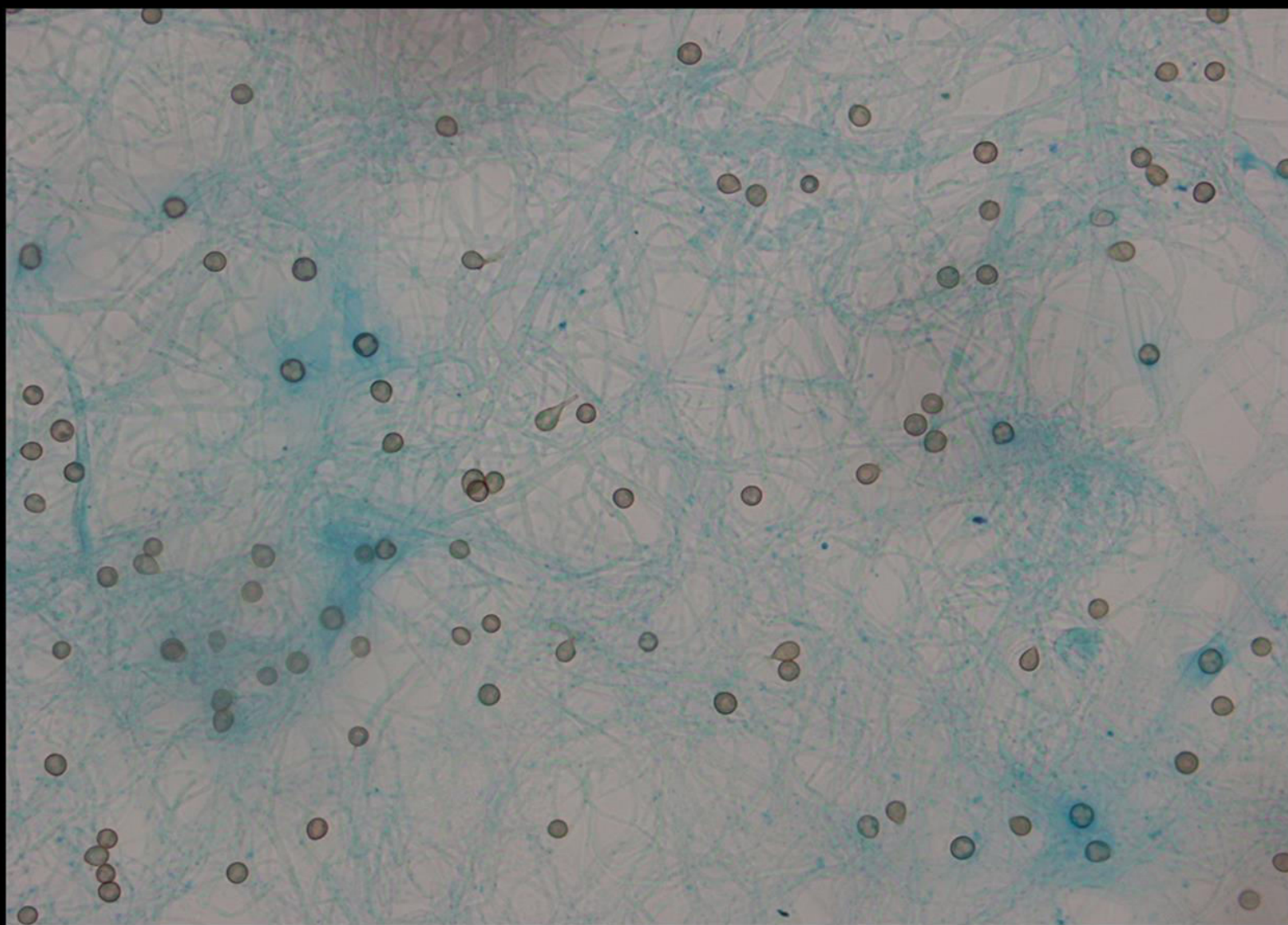


Eumycetoma

ii. Monosprium apiosprmmum

➤ **Microscopic morphology:**

- Hyaline thin Septate hyphae
- Conidiophore short and thin (hardly to appear)
- Conidia is oval or rounded, singly on top of conidiophore but it look like as sitting on top of the hyphae



Laboratory Diagnosis

- **Specimen:** grains, biopsy tissue
- **Direct microscopic examination:** stain with HE stain (histology), KOH
- **Culture:** on SDA.
- **Microscopic examination:** stain with LPCB will
- **Serology:** ID, CIE

3- Phaeohyphomycosis

- it is a subcutaneous fungal infection caused by number of dematiaceous fungi.
- **Etiological agent:**
 - Cladosporium sp.*
 - Ramichloridium mackenziei*
 - Exophiala sp.*
 - Fonsecaea sp.*

3- Phaeohyphomycosis

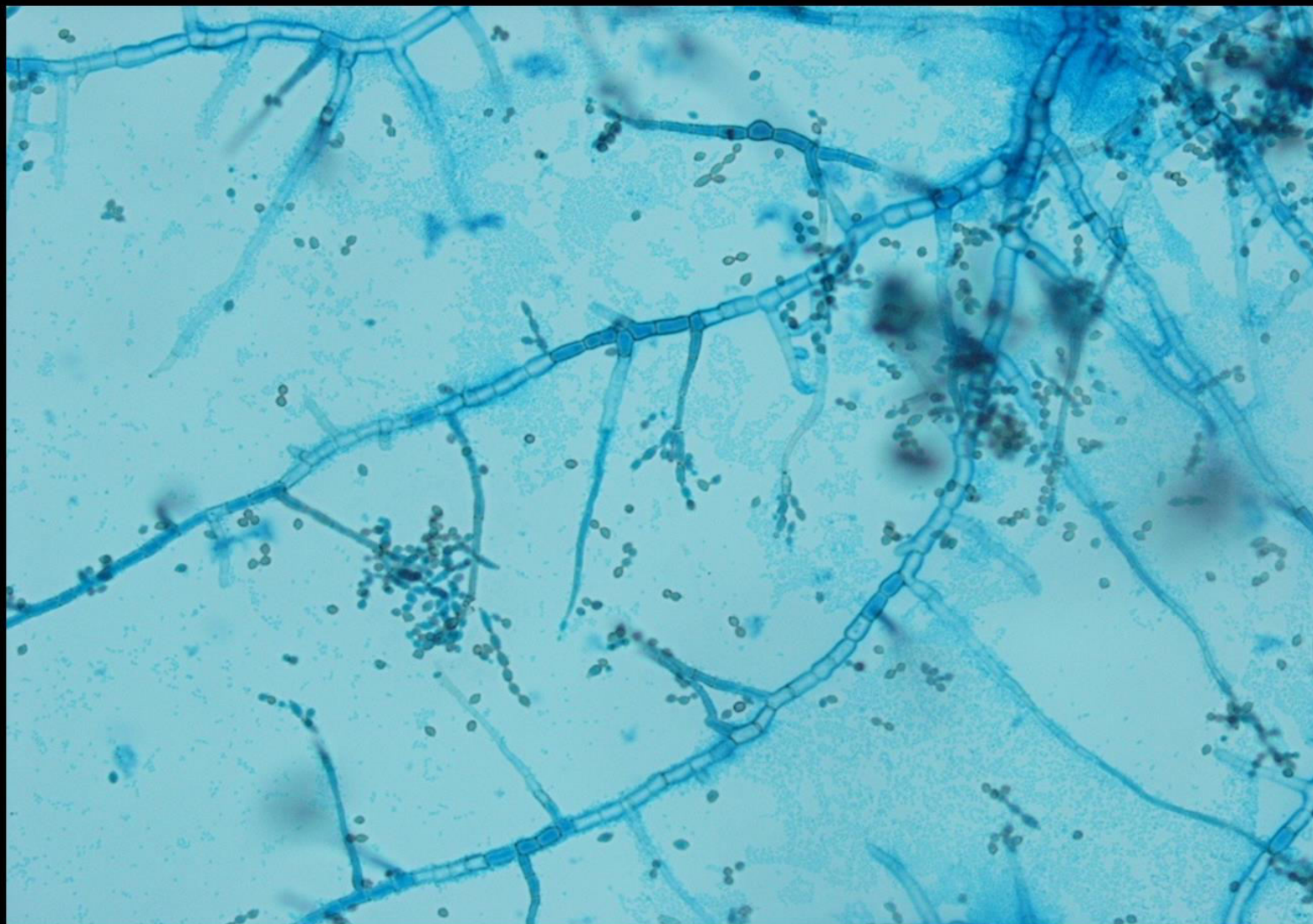
i. Cladosporium sp.

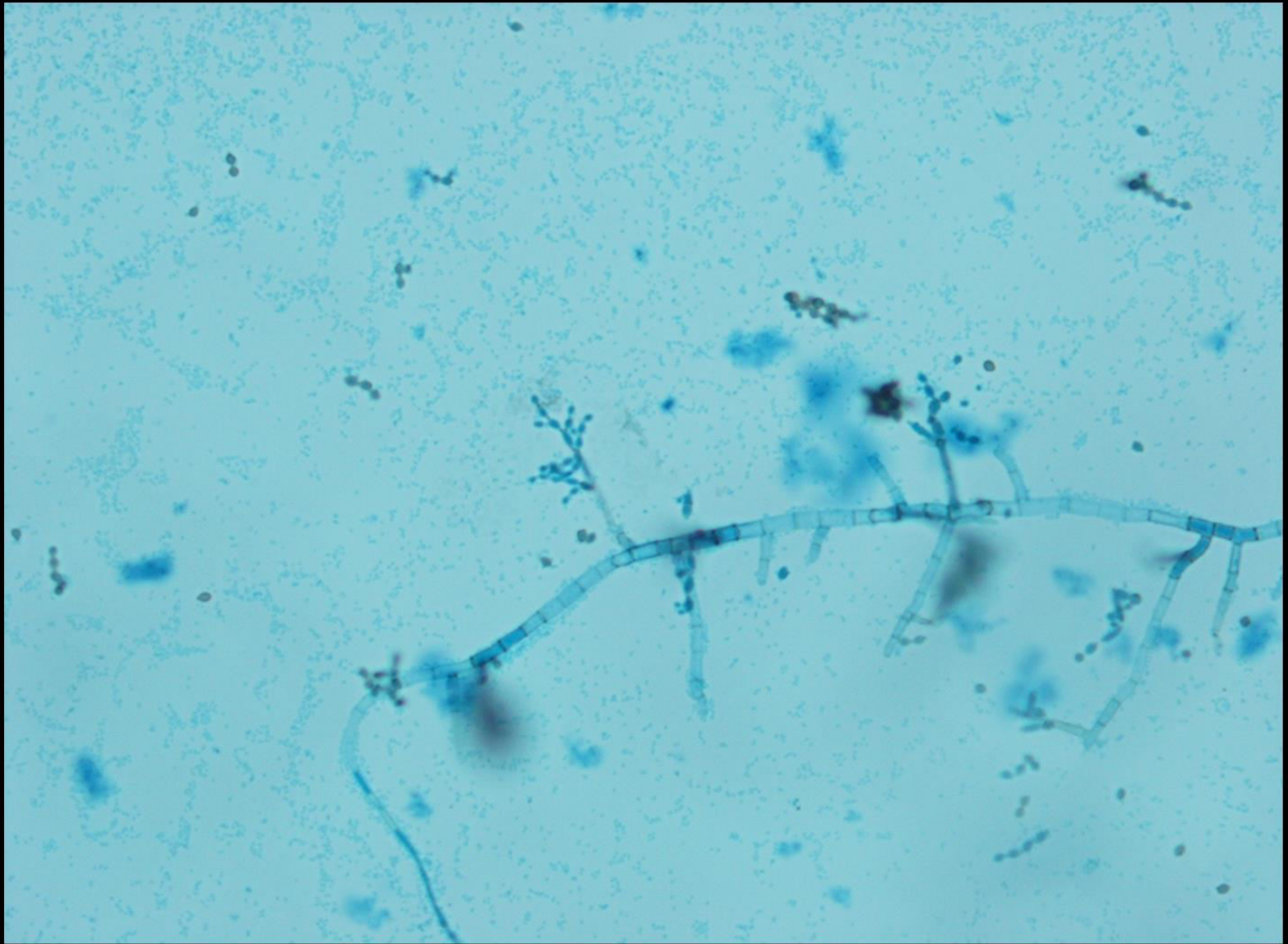
➤ **Colony morphology:**

Velvety and darkly pigmented

➤ **Microscopic morphology:**

- Septate hyphae, thick wall and brown in color
- Conidiophor produce long, branching chains of elliptical conidia



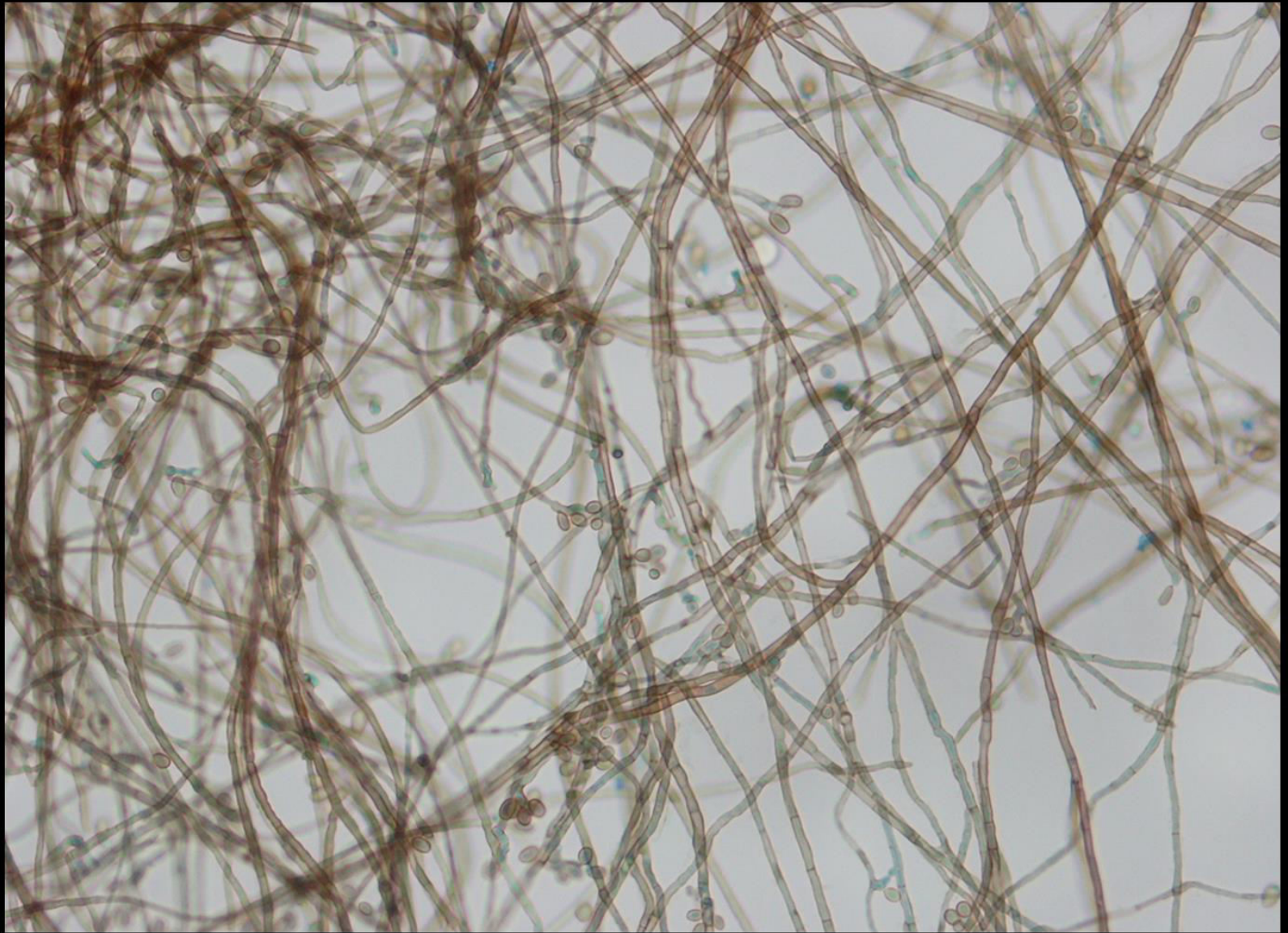


3- Phaeohyphomycosis

ii. Ramichloridium mackenziei

➤ **Microscopic morphology:**

- Septate hyphae and brown in color
- Short or long conidiophore
- Conidia 4-6 at the tip of the conidiophore and it is brownish in color.



Laboratory Diagnosis

- **Specimen:** Biopsy tissue, pus
- **Direct microscopic examination:** stain with 10% KOH will show brown, septate hyphae
- Culture:** on SDA (very slow growing, black colonies).
- **Microscopic examination:** stain with LPCB