



ROLE OF FONTANA MASON STAIN IN DIFFERENTIATING CRYPTOCOCCUS FROM HISTOPLASMA

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ABSTRACT

Introduction: Histoplasmosis is a granulomatous infection caused by *Histoplasma capsulatum*, a dimorphic fungus. Cutaneous manifestations are reported to occur in 10% to 25% of AIDS patients with disseminated histoplasmosis. **Case report:** A 45 yr old male patient was presented with fever and diffuse papular rashes all over the body since 15 days. The patient was a known case of AIDS, diagnosed 5 years back. He is on anti retroviral therapy. The lesions are papules with surface erosion/ulceration. Provisional diagnosis of fungal infection was made and skin biopsy has been taken. On histopathology, It shows plenty of round to oval bodies with clear cytoplasm and eccentrically situated basophilic dot below the cell wall. Periodic schiff stain(PAS) was **positive**. This morphology is suggestive of *Histoplasma capsulatum*. But on CSF , microbiologist has given as *Cryptococcus*. Hence to rule out the dilemma, Fontana Masson stain had been done. The fungal elements were negative for Fontana Masson stain. Hence final diagnosis was given as *Histoplasma* infection. **Discussion:** In case of *Histoplasma* and *cryptococcus*, both are positive for Indian ink preparation study, the role of Fontana Masson is very crucial. **Conclusion:** In conclusion, when morphology on biopsy is confusing, the special stains play a very important role in subtyping of fungus. However Culture is the gold standard test for all fungal organism.

KEYWORDS : *Cryptococcus*, *Histoplasma*, Fontana Masson

Introduction:

Histoplasmosis is a granulomatous infection caused by *Histoplasma capsulatum*, a dimorphic fungus. Cutaneous manifestations are reported to occur in 10% to 25% of AIDS patients with disseminated histoplasmosis. The skin lesions are polymorphic papules, plaques , pustules, nodules, mucosal ulcers, erosions or punched out ulcers. These lesions resembles molluscum contagiosum, acneform eruptions, erythematous papules ,keratotic plaques etc. Special stains like Periodic schiff stain, Gomori's methanamine silver stain, Masson Fontana stains plays a significant role in subtyping of fungal infection.

Case report:

A 45 yr old male patient was presented with fever and diffuse papular rashes all over the body since 15 days. The patient was a known case of AIDS, diagnosed 5 years back. He is on anti retroviral therapy. Now since last 15 days , patient noticed papular rashes, initially started over axilla and face, later extended all over the body. The lesions are papules with surface erosion/ulceration. Some appears umbilicated lesion. Provisional diagnosis of fungal infection was made and skin biopsy has been taken.



Figure 01: Skin lesions over face

On histopathology, Epidermis showed ulcer covered by granulation tissue composed of proliferating blood vessels and sparse mixed inflammatory cell infiltrate. Also seen plenty of round to oval bodies with clear cytoplasm and eccentrically situated basophilic dot below the cell wall. Periodic schiff stain(PAS) was **positive**. This morphology is suggestive of *Histoplasma capsulatum*.

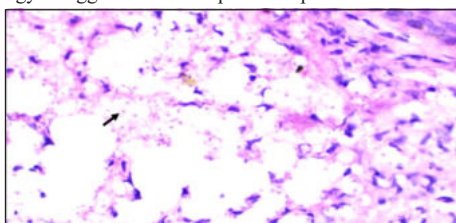


Figure 02: Section studied shows Plenty of round to oval bodies

with clear cytoplasm and eccentrically situated basophilic dot below the cell wall (arrow). (H&E, 40X)

CSF tap has been done for the patient to rule out fungal infection. Under Indian ink preparation, few negative stained fungal bodies are seen. The possibility of *cryptococcus* has been given by the microbiologist.

This creates a dilemma regarding the type of fungal infection. The Fontana Masson stain has been done. The fungal elements is negative for this stain (whereas *cryptococcus* is positive). Hence, the final diagnosis of *Histoplasma capsulatum* has been given. Culture was not done in this case.

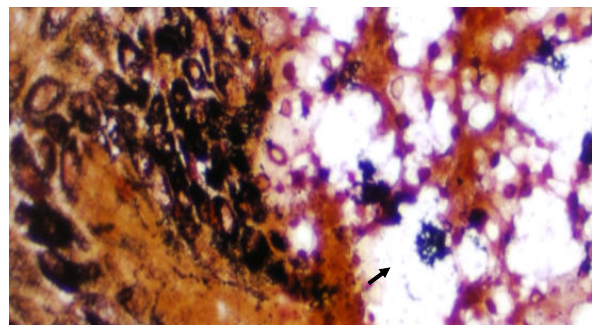


Figure 03: Special stain Fontana Mason shows absence stain of fungal elements (arrow). Internal control is melanocytes which stains positive (40X)

Discussion:

Special stain plays a very important role in the diagnosis of fungal infection, particularly in the COVID pandemic. Different special stains are worth mention here.

Mucicarmine stain:

It is used for to demonstrate the polysaccharide capsule of *cryptococcus* sp. Bright pink surrounding a medium sized yeast , confirms the presence of capsule.

Alcian blue:

It is used for to demonstrate the polysaccharide capsule of *cryptococcus* sp. It stains blue in color.

Fontana Masson stain:

It stains the cell wall and melanin pigment. It is useful to demonstrate the fungus which is a melanin producer, as in dematiaceous fungi and *Cryptococcus*. Caution should be exercised when interpreting

Fontana-Masson staining, since many *Aspergillus* spp., some *Mucorales* genera, and *Trichosporon* can also show positive staining.

Cresyl fast violet:

It stains bacteria and fungi. Most fungi appear blue or purple, *Mucorales* may appear red.

In case of *Histoplasma* and *Cryptococcus*, both are positive for Indian ink preparation study, the role of Fontana Masson is very crucial. *Histoplasma* will not take stain, whereas *Cryptococcus* will take up the black colored stain.

Conclusion

In conclusion, when morphology on biopsy is confusing, the special stains play a very important role in subtyping of fungus. However Culture is the gold standard test for all fungal organisms.

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