

Placental Cryptococcosis in an HIV Infected Woman with Eclampsia: A Rare Case Report

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ABSTRACT

Cryptococcosis is not uncommon, especially among immunocompromised patients. However, placental cryptococcosis is rare, with few reported cases in the literature. A 21 yr. old primigravida, a known case of HIV was admitted to hospital at 36 weeks gestation for antepartum hemorrhage. Her vital signs were within normal limits. Her laboratory investigations revealed hemoglobin-6 gm%. The peripheral smear showed microcytic hypochromic anemia. Urine showed traces of albumin. On the sixth day of admission, she developed features of eclampsia and delivered a male baby of birth weight 1700 gm. The placenta weighed 350 gm. Microscopy of placenta showed marked perivillous fibrin deposits, decidual arteriopathy and syncytial knots. At places, cryptococci were seen which showed thick capsule around them. A diagnosis of placental cryptococcosis with features of eclampsia was made. On the third day postpartum, she developed drowsiness and disorientation. CSF analysis was suggestive of cryptococcal meningitis. On the fifth day postpartum, patient died of DIC and multiorgan failure. It is important to establish the involvement of placenta by the opportunistic infections like *Cryptococcus neoformans* in immunocompromised women, so that the baby and the mother can be instituted with immediate appropriate management.

Keywords: Placenta, *Cryptococcus neoformans*, HIV

Introduction

Cryptococcosis, an invasive infection caused by *Cryptococcus neoformans*, has become an increasingly prevalent opportunistic infection in immunocompromised patients, especially in patients infected with the human immunodeficiency virus (HIV).^[1]

Pregnancy is a state of subtle immunosuppression, in which an imbalance between T helper (Th) and suppressor lymphocytes occurs during the second and third trimesters. A heightened Th2 response allows for the development of infections caused by a number of pathogens, including fungi such as *Cryptococcus neoformans*.^[2] *Cryptococcus neoformans* involves many organs. However, placental cryptococcosis is rare, with few reported cases in the literature.^[3] The tropism of the placenta for cryptococcal infection and the nature or the type of immune response and reactions are not well known.^[1]

We present here a case of HIV infected women with placental cryptococcosis and meningitis in pregnancy.

Case Report

A 21 yr old primigravida was admitted to hospital at 36 weeks gestation for antepartum hemorrhage. Her vital signs were within normal limits. Her past medical history was positive for HIV serum antibody. First and second trimesters were uneventful. On examination of per abdomen, uterus corresponding to 36 weeks of gestation.

Her laboratory investigations revealed hemoglobin-6 gm%, total WBC count-7000 cells/mm³, platelet count-4.81 lakhs/mm³, ESR- 55mm at the end of one hour and traces of albumin in urine. The peripheral smear showed microcytic hypochromic anemia. Her blood for Rapid plasma reagin for syphilis and HBsAg were non- reactive.

On the sixth day of admission, the patient developed features of eclampsia. Per vaginal examination revealed, dilated and partially effaced external os. Prophylactic MgSO₄ was given. Labor induction was done and she delivered a male baby of birth weight 1700 gm. The placenta was sent for histopathological examination.

Grossly, the placenta weighed 350 gm with diameter- 14cm and thickness-3.5 cm. Umbilical cord measured 23.5 cm in length. Fetal and maternal surfaces were unremarkable. Cut surface- showed few grey-white areas. (Fig.no-1)

Microscopy: Sections from the umbilical cord were unremarkable. Sections from the membranes showed moderate neutrophilic infiltration. Sections from placental disc showed marked perivillous fibrin deposits, decidual arteriopathy and increased syncytial knots. (Fig.no-2) At places, cryptococci were seen which showed thick capsule around them. PAS stain showed PAS positive capsule of *Cryptococcus neoformans*. (Fig.no-3) A diagnosis of placental cryptococcosis with features of eclampsia was made.

Later, on the third day postpartum, she developed drowsiness and disorientation, SPO₂-100% and lungs showed bilateral crepitations. CT brain (plain) was done, which showed hypodensity in the right caudate nucleus suggestive of infarct. CSF analysis was done, which showed budding yeast forms of *Cryptococcus neoformans* suggestive of cryptococcal meningitis. On the fifth day postpartum, patient died of shock, renal failure, DIC and multiorgan failure. The baby was alive, treated in NICU and was healthy at the time of discharge.

Discussion

Cryptococcus neoformans, the etiologic agent of human cryptococcosis, is a spherical yeast like organism surrounded by a polysaccharide capsule. The fungus

reproduces by budding and normally no hyphae are present. It grows at 37°C on Sabouraud's agar as a mucoid cream to brown colored colony. *Cryptococcus neoformans* has a worldwide distribution and cause illness in both man and animals. Usually, it grows as a saprophyte on soil, vegetation and pigeon droppings and only infrequently causes disease in man. Its occurrence in man is sporadic.^[4]

Hematogenous dissemination particularly to the meninges occur in patients with impaired cell mediated immunity.

^[5] Cryptococcosis occurs in about 10% of AIDS patients.

Opportunistic cryptococcal infections are not uncommon in immunocompromised pregnant women.^[1] In addition to the fact that AIDS favors the occurrence of cryptococcosis, there is evidence that the hormonal and immunological changes inherent to the gestational state favor the onset of diseases caused by intracellular pathogens. Several cases of cryptococcosis affecting pregnant women have been reported, either as pneumonia in previously healthy women or more commonly as an infection of the CNS.^[6] In the setting of advanced acquired immunodeficiency syndrome cryptococcal meningitis is not curable by antifungal medications without immune reconstitution.^[1]

The placenta plays a central role in pathogenesis of eclampsia, since the symptoms disappear rapidly after delivery of the placenta. The placental changes

include infarcts, exaggerated ischemic changes in the chorionic villi and trophoblast, consisting of increased syncytial knots, abnormal decidual vessels which show thrombi, fibrinoid necrosis, acute atherosclerosis.^[7]

Our case documented intervillous space involvement by cryptococcal organisms associated with fibrin and neutrophils. However we couldn't do culture to isolate the organism. Also placenta showed eclamptic changes, which include increased syncytial knots, decidual arteriopathy and fibrin deposits.

Table-1: Correlation of the present case report with the other case reports showing placental cryptococcosis in a HIV infected woman.

Studies	Darko et al	Guilarde et al	Castro et al	Kida et al	M Patel et al	Present case report
Maternal HIV status	+	+	+	+	+	+
Mode of delivery	C/S	C/S	Vaginal delivery	C/S	C/S	C/S
Maternal outcome	expired	NK	expired	expired	Expired	expired
Infant Cryptococcus infection	No	Yes	NK	No	Yes	No
Infant outcome	A/W	A/W after treatment	expired	A/W	A/W after treatment	A/W
Placental Cryptococcus infection	+ with chorionic villi invasion	+	NK	+	+ with focal chorionic villi invasion	+

+ - present, C/S- caesarian section, NK- not known, A/W- Alive and well.



Fig.1: Gross photograph of the placenta showing a. foetal surface, b. maternal surface, c. cut surface with pale-white areas.

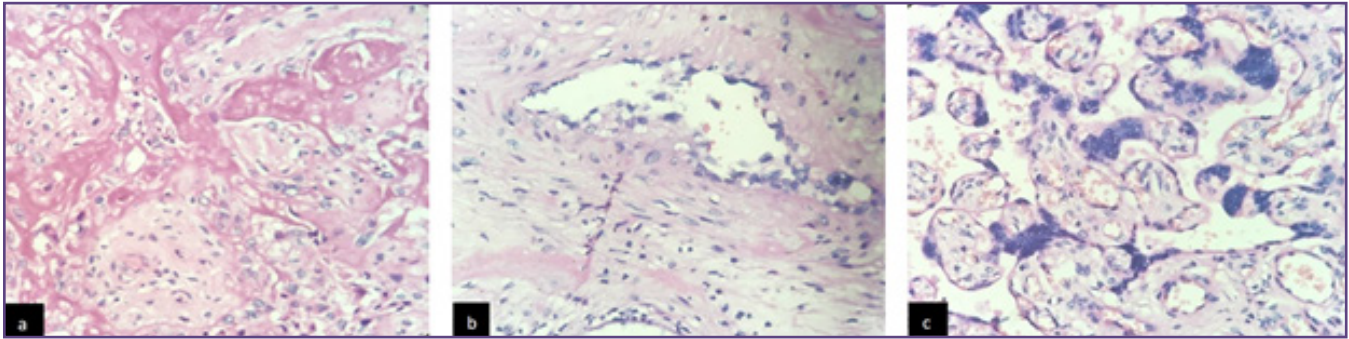


Fig. 2: Photomicrograph showing a. marked perivillous fibrin deposits, b. decidual arteriopathy, c. increased syncytial knots in the placenta (40x H&E).

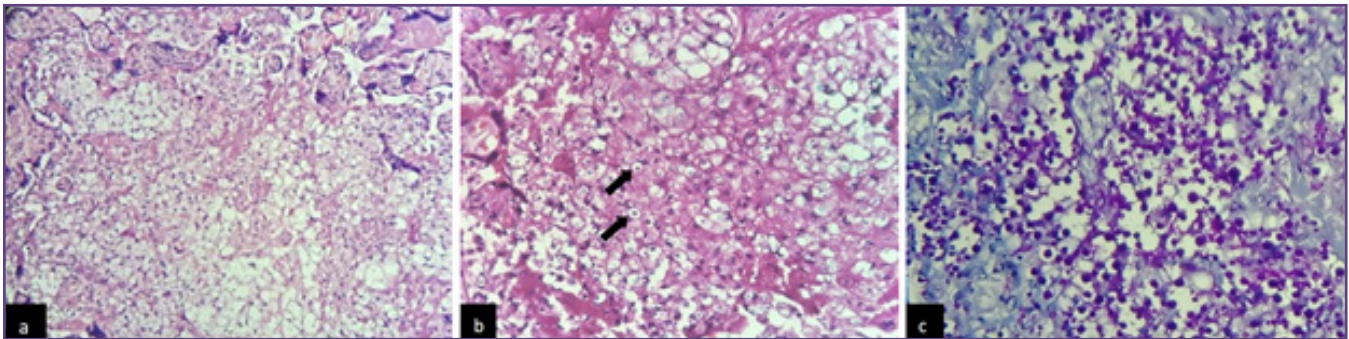


Fig. 3: Photomicrograph showing a. Cryptococcus neoformans in the intervillous space. (10x H&E) b. Cryptococcus neoformans in the intervillous space (40x H&E) c. Cryptococcal capsules stained positively with PAS (40x PAS).

Conclusion

It is important to establish the involvement of placenta by the opportunistic infections like *Cryptococcus neoformans* in immunocompromised women so that the baby and the mother can be instituted with immediate appropriate management.

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