

PLACENTAL TUBERCULOSIS ABOUT ONE CASE AND LITERATURE REVIEW

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Abstract: -

Tuberculosis is an endemic disease in poor country comprising Madagascar. There are no many report about tuberculosis associated with pregnancy and placental examination is rarely reported. The insidious manifestation of tuberculosis in pregnant woman and the apparition of the signs few days post partum in the newborn cause the late of diagnosis. By the mechanism, the site and means of dissemination, the placental tuberculosis is divided in five histological categories: decidual, intervillous, intravillous, amniotic and chorioamniotic intravascular. Fetal transmission is suspected in intrachorial tuberculosis. Fetal transmission is rare if the mother is treated normally but can be favored by HIV coinfection. We report a case of 31 years old woman in 38 weeks of amenorrhea with antecedent of pleural tuberculosis under treatment during 2 months. Placental histological examination showed decidual tuberculosis. Our aims are to describe histological feature of placental tuberculosis and to compare it with the literature.

INTRODUCTION

Tuberculosis is an endemic disease in Madagascar [1]. Since 1900 until 2010, only 400 cases of congenital or perinatal tuberculosis have been reported and few are supported by a histological examination of the placenta [2]. A fetal transmission is often insidious and the diagnosis is mostly perinatal by the appearance of signs to the newborn [3]. The histological study of the placenta has made it possible among other things to understand the mechanism and the chronology of the lesions due to *Mycobacterium tuberculosis*.

We report a placental tuberculosis case to a pregnant woman of 38 weeks under treatment. Our objectives are to describe the histological features of the tuberculosis lesion of the placenta and to compare it with the literature.

Case report

It was a 31 years old pregnant woman of 38 weeks with pleural tuberculosis, in the second month of treatment. The fetus presented growth retardation wherefore a caesarean section was indicated. The placenta and two fragments of peritoneal biopsy were sent for an histological examination. On gross, the umbilical cord 20 cm length was filiform, yellowish and paracentral. It comprised 3 blood vessels. The membrane was thickened and yellowish. The placenta measured 15 x 13 x 3 cm and weighed 300g. It was rounded in shape and normal configuration. The chorial plaque presented filiform and overlapping vessels. A white focus under peripheral chorial of 3 x 2 cm was observed. The basal face was lobulated. When cut, the white focus under chorial plaque corresponded to a well defined peripheral necrosis zone measuring 1,5 x 3 cm. It involved about 20% of placental parenchyma and extended from the chorial plaque to the basal plaque. Peritoneal biopsies were in the shape of two fibroadipous fragments measuring respectively 2,5x0,5x0,2 cm and 2x0,7x0,2 cm. they were entirely included.

On histological examination, the umbilical cord contained two arteries and one vein. No morphological signs of funiculitis or chorioamniotic were observed. The villousities are pulled together, mature and of small size presenting vessels sometimes thrombosed or containing a hyaline deposit. The intervillous space is the site of fibrine deposit without intervillitis. At the zone of necrosis level mentioned in gross examination, the deciduas basilar are widely reshuffled by caseous necrosis without inflammatory granuloma nor giant cell. The basal plaque and chorial plaque are the site of coagulation necrosis with ghostly villousities. The histological aspect was in favor of deciduous placental tuberculosis.

The two peritoneal fragments coincided to fibrous tissue of epithelioid granuloma with giant cell Langhans type in favor of peritoneal tuberculosis.

Discussions

Tuberculosis is a disease due to *mycobacterium tuberculosis* with a high rate of mortality and morbidity [4]. It is a problem of public health most of all in developing countries where it is endemic [1]. Immunocompromised related to the pregnancy favors the dissemination of the *mycobacterium* in several organs such as brain epiploon or placenta, which is very rare [5]. However, in pregnant woman, the manifestation is sometimes insidious and the diagnosis is made in some cases in post partum by the apparition of signs a few days later in the new born and the mother.

By the mechanism, the site and means of dissemination, the placental tuberculosis is divided in five histological categories [6] [7]: deciduous, intervillous, intravillous, amniotic and chorioamniotic intravascular.

In our study, the basal deciduas is reshuffled by a large range of caseous necrosis without granuloma nor giant cell, the basal and chorionic plaque presented ranges of coagulation necrosis with ghostly villousities sometimes represented thrombosed vessels with hyaline deposits. By the literature, the slowness of the blood circulation favors the deposit of *Mycobacterium* in the placental vessels. The destruction of the endothelium by *mycobacterium tuberculosis* leads the formation of thrombosis causing villous ischemia. After endothelial destruction, the *mycobacterium* develops itself within deciduas and provokes a caseous necrosis. The particular differentiation of deciduas cells is the cause of the loose of immune response of cells face to ordinary irritant agents whence the absence of inflammatory granuloma and giant cells like in the other tissues. This phenomena observed at the placenta level permitted to establish the primary lesion of tuberculosis, is therefore caseous necrosis.

Intervillous tuberculosis is characterized by the presence of intervillous thrombin composed of fibrin, lymphocytic and leucocyte debris and especially hyaline deposits. According to Warthin et al [6], the mechanism is through the thrombose of lymphatic vessels which open at the periphery of villousities. The giant cells come from the stroma cells of villousities. Thus, on histological examination, we can also observe free thrombins in the intervillous space or join to villousities. Giant cells of Langhans type can also be observed and highlight the *Mycobacteria* in these thrombins by special stain.

Intravillous tuberculosis is characterized by the presence of granuloma with giant cells and foci of caseous necrosis in the villous parenchyma with or without intervillous thrombus and lesions of the lymphatic vessels.

The tuberculosis of amniotic vessels is characterized by the presence of intravascular amniotic thrombus with vascular lesion by hyaline deposits and inflammatory cell debris.

Chorioamniotic tuberculosis presents classic lesions in the amniotic membrane level with inflammatory granuloma, giant cells and caseous necrosis.

For materno-fetal transmission, in our study, the follow up of the newborn was not done. On the other hand, histological lesion of the placenta makes believe that there was no materno-fetal transmission. However, a short and long term follow up of the newborn is essential mainly for the discussion of the necessity or not of an anti-tuberculous vaccine. According to Abramovsky C et al. [3], the materno-fetal transmission will be rare if the mother is treated normally. It can be favored by the co-existence of tuberculosis infection and HIV.

Conclusion

Placental tuberculosis is a rare pathology. The diagnosis is often ignored due to its insidious clinic shape in pregnant woman. Histological studies concerning this pathology are very poorly documented. The mechanism of the lesions and the different histological type allow to establish the classification of the placental tuberculosis and to suspect a materno-fetal transmission face to a neonatal infection resistant to usual antibiotic treatment. Short and long term survey of the newborn will permit to establish a protocol of care, mainly concerning the antituberculous vaccine.

REFERENCES

- [1]- Connolly M, Nun P (1996) Women and tuberculosis. *World Health Stat Q* 49: 115-119.
- [2]- Whittaker E, Kampmann B. Perinatal tuberculosis. New challenges in the diagnosis and treatment of tuberculosis in infants and the newborn. *Early Hum Dev* 2008;84:795–799.
- [3]- Abramowsky C, Gutman J, Hilinski J A. Mycobacterium tuberculosis Infection of the Placenta: A Study of the Early (Innate) Inflammatory Response in Two Cases *Pediatric and Developmental Pathology* 15, 132–136, 2012 doi: 10.2350/11-05-1039-cc.1.
- [4]- Nunes C, Cunha S, Gomes I (1998) Fatores prognósticos de letalidade na meningoencefalite tuberculosa. *Arq Neuropsiquiatr* 58: 772-777.
- [5]- Nabulsi BK, Kadi M, AlAbadi H, Alnabulsi RK, Badeghiesh A, et al. (2014) Pregnant Woman with Fulminant Disseminated TB to the Omentum and Placenta. *Gynecol Obstet (Sunnyvale)* 4: 225. doi:10.4172/2161-0932.1000225.
- [6]- Warthin A S, Tuberculosis of the Placenta. A Histological Study with Especial Reference to the Nature of the Earliest Lesions Produced by the Tubercle Bacillus. *The Journal of Infectious Diseases*, Vol. 4, No. 3 (Jun. 15, 1907), pp. 347-368.
- [7]- WELLER C V, two additional cases of miliary tuberculosis of the placenta with clinically latent tuberculosis of the mother.