

## Medullary Aplasia and Pregnancy: A Case Report and Review of the Literature

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### ABSTRACT

*Pregnancy-associated bone marrow aplasia is a rare clinical entity. Its management remains a challenge for obstetricians and hematologists. The maternal-fetal morbidity is very high. We report a case of a pauper patient followed for aplasia labelled during pregnancy following a haemorrhagic stroke.*

### Keywords

Aplastic anemia, Pregnancy, Stroke.

### Introduction

Marrow aplasia (MA) is a group of non-cancerous, non-contagious diseases that affect the production of blood cells. It is characterized by the fact that the body makes too few blood cells due to bone marrow failure. MA is a rare disease with an incidence of 2-3 cases per million people per year in Europe and the US [1]. It is defined by bone marrow-poor pancytopenia, which may be idiopathic (80%), constitutional (15-20%) or promoted by exposure to toxic or drug agents (1-2%). A few cases of AOS occurring during pregnancy have been described, which may have serious maternal and fetal consequences. The pathophysiology of its occurrence during pregnancy remains unknown [2]. This pathology can affect the maternal and fetal prognosis through episodes of hemorrhage and infection. The maternal mortality rate exceeds 20% and the fetal complications are 60%. In the light of an observation, we will discuss the diagnostic and therapeutic elements of AM during pregnancy and the difficulties of management [3].

### Case Report

This 31-year-old parturient, IIGIIP, with no particular pathological history, was admitted to our training for generalized tonic-clonic seizures during a pregnancy estimated at 33 weeks of amenorrhea. There was no notion of any exposure to a toxic product or radiation before or during the pregnancy. The clinical examination revealed an obnubilated patient, with marked mucocutaneous pallor,

extensive ecchymosis, gingivorrhagia and oral-nasal hemorrhagic bullae. The blood pressure on admission was 160/90, and the proteinuria was 3 crosses. The obstetrical ultrasound scan showed an evolving mono-fetal pregnancy, with biometrics corresponding to the presumed term of the pregnancy. The biological work-up showed an anemia at 7.6 g/dl normocytic normocytic aregenerative, a leukopenia at 1870/mm<sup>3</sup>, a thrombocytopenia at 2000/mm<sup>3</sup> and a hepatic cytolysis with a rate of ASAT: 165UI/L, ALAT: 369UI/L. The obstetrical team for maternal-fetal rescue allowing the extraction of a male neonate, Apgar 8/10, and a birth weight of 1200g indicated an emergency cesarean section. The patient benefited from an intraoperative transfusion of platelets and leukoreduced red blood cells. Postoperatively, the patient was transferred to the intensive care unit, where she presented a delayed awakening with anisocoria. A cerebral CT scan was performed showing a hemorrhagic right capsulo-lenticulo-thalamic stroke with flooding of the left lateral ventricle and subfalcoral involvement associated with hemorrhagic lesions of the posterior cerebral fossa. The patient received osmotherapy. The postoperative biological check-up showed a corrected hemoglobin level of 9.6 g/dl, a lymphopenia of 1890/mm<sup>3</sup>, and a thrombocytopenia of 41,000/mm<sup>3</sup>. In addition, the rest of the biological work-up was normal. A neurosurgeon's opinion was sought and he indicated an external ventricular bypass, subject to a normal platelet count. During her stay in intensive care, the evolution was marked by the installation of a hemodynamic instability and persistence of the clinical hemorrhagic syndrome with the biological assessment of hydro-electrolytic disorders associated with a pancytopenia. The

patient presented a bilateral areactive mydriasis associated with an abolition of the reflexes of the brain stem with aggravation of the previous lesions, intracranial hypertension and diffuse cerebral edema at the cerebral CT scan. The patient presented a cardiorespiratory arrest secondary to brain death due to the HTIC and cerebral edema.

## Discussion

Aplastic anemia is a hematological disorder characterized by the absence or reduction of the figurative elements of the blood in the spinal cord. The association of this pathology with pregnancy is rare [4]. According to epidemiological data in the literature, about 134 cases of AM associated with pregnancy have been reported, Ehlich, whose evolution was marked by maternal death, described the first of which in 1888. Etiologically speaking, and in parallel to our observation, more than 70% of cases of medullary aplasia in pregnancy are idiopathic. Flavia et al. have reported only one case of Fanconi's disease. One pregnancy in AM complicated by paroxysmal nocturnal hemoglobinuria has also been described in the literature [5]. Pathophysiologically, bone marrow aplasia involves intrinsic (genetic alterations of hematopoietic stem cells) and extrinsic (immunological disorders of T-lymphocyte dependent cells, cytotoxic agents, radiation...) factors [6,7]. Its relationship with pregnancy is poorly elucidated, and several authors deny the presence of an obvious link. However, some support the hypothesis of its association with AOS, given the regression of some cases after delivery, and the relapse during subsequent pregnancies. Hormonal factors seem to be involved, in particular an imbalance between the action of estrogen (inhibiting erythropoiesis), erythropoietin (stimulating erythropoiesis) and placental lactogen [8]. The course of the pregnancy can be normal for both the mother and the fetus, if there is good follow-up [9]. However, the evolution can be marked by complications, particularly maternal death. Mortality often occurs in a situation of septic or hemorrhagic shock refractory to treatment [10].

The management of AM includes two components, symptomatic treatment based on transfusion of red blood cells and platelets, as well as management of infectious episodes; and curative treatment (immunosuppressants, hematopoietic stem cell allografts, hematopoietic growth factors and androgens). Supportive care remains the first-line treatment in pregnant women. The evolution is conditioned by a good follow-up. The transfusion objectives are a hemoglobinemia greater than 80 g/L; a platelet count greater than 20 G/L, in order to ensure normal fetal growth and prevent hemorrhagic accidents. Red blood cells must be phenotyped, leukocyte-depleted and compatible in the rhesus and Kell systems. For platelets, HLA compatibility is required. Management of infectious episodes with broad-spectrum antibiotic therapy is also

crucial [3]. Immunosuppressive agents and hematopoietic stem cell transplantation (HSCT) ensure survival in more than 75% of cases of bone marrow aplasia. Their place in curative treatment during pregnancy is controversial. Most authors insist that they are formally contraindicated because of the risk of fetal toxicity, while others indicate their use in the event of failure of supportive measures [11].

## Conclusion

The association of AM with pregnancy is a rare and serious situation. The risk of compromising the maternal-fetal prognosis is a major concern for practitioners, which is why it is important to monitor the pregnancy closely for possible complications. Treatment must be based on a well-coded algorithm shared by the hematologist, obstetrician and resuscitator in order to improve the functional and vital prognosis.

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