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Case Report

Acute myelocytic leukemia in pregnancy case report and literature review: a case report

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ABSTRACT

Leukemia is a rare entity in pregnant women, when occurs it is usually of myeloid originand acute course, its diagnosis and management remains a challenge because of the limited availability of information resources due to the low frequency of this pathology, the management decision will be carried out by a multidisciplinary team that includes obstetricians, hematologists, psychologists, involving ethical issues always seeking to improve the maternal and fetal prognosis and never forgetting the wishes of the patient andher family. We present the case of a woman in the fourth decade of life, with pregnancy in the third trimester in which acute myeloid leukemia was diagnosed and where it was decided by a consensus of specialists in hematology, gynecology and pediatrics, to prolong the pregnancyuntil 32 weeks and then start chemotherapy.

Keywords: Pregnancy, Acute leukemia, Chemotherapy

INTRODUCTION

Leukemia is a hematologic cancer characterized by the exponential proliferation of hematopoietic precursor cells in the bone marrow. The increase of these defective cells interferes with the proper activity and reproduction of healthy cells. The myeloid lineage most commonly presents acutely and in adults is the second most frequent cause of leukemia.[1,2]

In Mexico, this type of cancer is the leading cause of death in the population under 15 years of age (51% in men and 56% in women) and in young people between 15 and 29 years of age(33% in men and 32% in women).[3]

So far, no etiology or triggering factor has been found, but there are well known environmental risk factors such as: exposure to radiation, chemotherapy, retrovirus infection, genetic mutations, the latter being evidenced by the higher incidence of leukemia in familial syndromes such as fanconi anemia, bloom syndrome and li-fraumeni syndrome.[2]

Diagnosis may be hindered by the physiological changes of pregnancy itself, since cytopenia's, mainly of red blood cells and platelets, are a frequent finding in pregnant women and imply several differential diagnoses. Likewise, the clinical manifestations of weakness, pallor, fatigue, are symptoms frequently reported by the patient and do not necessarily imply a pathology. Because of this, treatment may often be delayed.[4-6]

With the passage of time, we have a greater variety of cytostatic, however, there are few studies on their use in this group of patients. Despite the risk involved in treatment, especially in early pregnancy, treatment should not be delayed, as the risk of progression and worsening prognosis is high.[4,7,8]

Leukemia in pregnant women should be approached in a

multidisciplinary manner, under the consensus of different specialists, taking into account the characteristics and progression of the disease, and the patient's wishes, in a high specialty hospital.[1,4,6]

We will now discuss the clinical case of a pregnant patient with acute myeloid leukemia diagnosed in the second half of pregnancy, its management and outcome obtained, the objective of this is to present a diagnostic and therapeutic approach and also to review the literature on the subject to expand knowledge about this entity.

CASE REPORT

We received a 31-year-old patient, with previous delivery, pregnant at 27.3 sdg, sent from her local hospital for clinical suspicion of leukemia. As important antecedents, comorbidities present with iatrogenic hypothyroidism secondary to thyroid nodule extraction at 6 years of age, and carrier of chronic arterial hypertension of 2 years of evolution under control, extraction of ovarian tumor in 2021.

On interrogation she reported gingivorrhage when brushing her teeth, palpitations, asthenia and adynamia of one month of evolution. His paraclinical tests on arrival showed the presence of pancytopenia at the expense of hemoglobin 7.2, platelets 46 thousand and leukocytes of 4.7. She also had a peripheral blood smear performed in his hospital of origin that reported hypercellular bone marrow, infiltrated by blasts of myeloid and monocytoid aspect, establishing the diagnosis of probable acute myeloid leukemia.

Once in our unit, obstetric ultrasonography was performed, which was reported without alterations, and it was decided to immediately consult the hematology service due to physical and clinical manifestations characteristics compatible with leukemia, who decided to perform a bone marrowaspirate and biopsy, where 22% of blasts were found.

Once the diagnosis was confirmed, the case was submitted to the bioethics committee who decided to carry the pregnancy to 32 sdg for greater fetal benefit. The hematology service decided to manage the patient on an outpatient basis every 48 hours due to the clinical presence of indolent leukemia. Prior to her discharge, a new obstetric ultrasound was performed, where intrauterine growth restriction I/IV was identified, so a weekly so a weekly follow up appointment was made at the high-risk obstetrics office.

During her outpatient evaluation, hemoglobin was found to be 7.3 as well as platelets below 50 thousand, so it was decided to readmit the patient for transfusion of globular packets and platelet apheresis on 2 occasions. During her stay with the gynecology and obstetrics service, the patient presented epistaxis and elevated blood pressure, so the service in charge decided to advance the abdominal termination of pregnancy to reduce the risk of maternal and fetal morbidity and mortality.

A female newborn was born on 04/21/2022 at 10:03 am with a birth weight of 1250 grams APGAR 7/8, Ballard of 30 weeks of gestation. During the surgery a bleeding of 250 cc was obtained without any complication, bilateral tubal occlusion was performed as a definitive method of family planning, during the immediate postpartum period a total of 6 platelet concentrates were transfused, having a good evolution of the post-surgical state. On 21/2022 the newborn died due to early neonatal sepsis.

Patient with good evolution during her immediate puerperium, discharged with alarm clinical data and appointment to outpatient clinic for removal of stitches and surveillance, remaining with good clinical evolution during the rest of the puerperium.

On 5/05/20222 the patient was admitted to the hematology service with the diagnoses of acute myeloid leukemia M2 of the FAB, normocytic normochromic anemia grade II of WHO, grade III thrombocytopenia, late surgical puerperium, primary hypothyroidism and chronic arterial hypertension, to evaluate initiation of chemotherapy to induce remission.

Bone marrow immunophenotyping on 6/05/2022 reports: 23% clonal population CD45+ Weak, CD16-, CD13+, CD34+, CD177+, CD11b-, CD10-, CD35-, CD65-, and CD14-.

On 7/05/2022 a 7+3:1 remission induction scheme is started. Cytarabine 160 mg in 24-hour continuous infusion on May 7, 8, 9, 10, 11, 12 and 13, 2022. Daunorubicin 96 mg on May 07, 08 and 09.

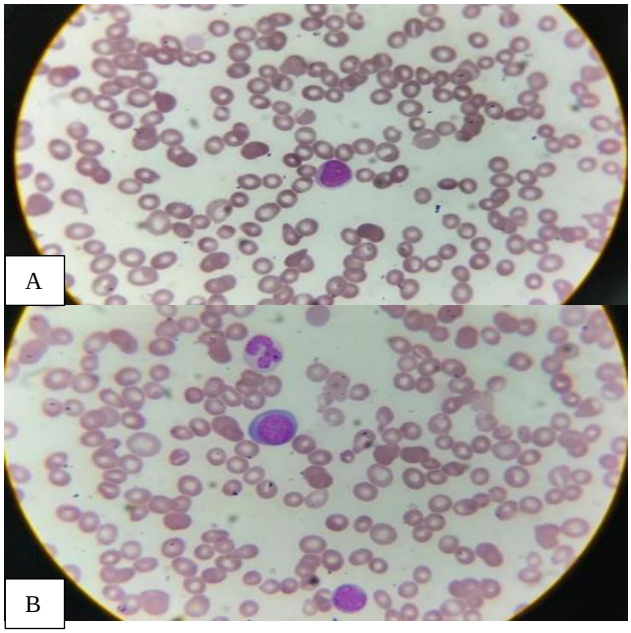

Figure 1 (A and B): Peripheral blood smear: erythroid series with anisocytosis and poikilocytosis, myeloid series with neutrophils with evidence of dysplasia, 16% of immature cells suggestive of myeloid blasts, with presence of 1-3 nucleoli per cell.

Patient with good tolerance during drug administration, was kept under surveillance, prophylactic management and myelosuppression support until 05/26/2022, when she was discharged on her 19th day after induction chemotherapy, due to good clinical evolution, without presenting infectious processes, febrile symptoms or transfusion needs. Likewise, the patient was referred to an outpatient clinic for surveillance, with indication of bone marrow aspirate and hospitalization on 06/2/20/2022 and 06/05/2022 respectively for evaluation of the response to remission therapy.

According to the images obtained so far from the bone marrow aspirate (Figure 2), more than 20% of blasts are observed, which indicates a poor response to chemotherapeutic treatment, with a poor prognosis of survival for the patient.

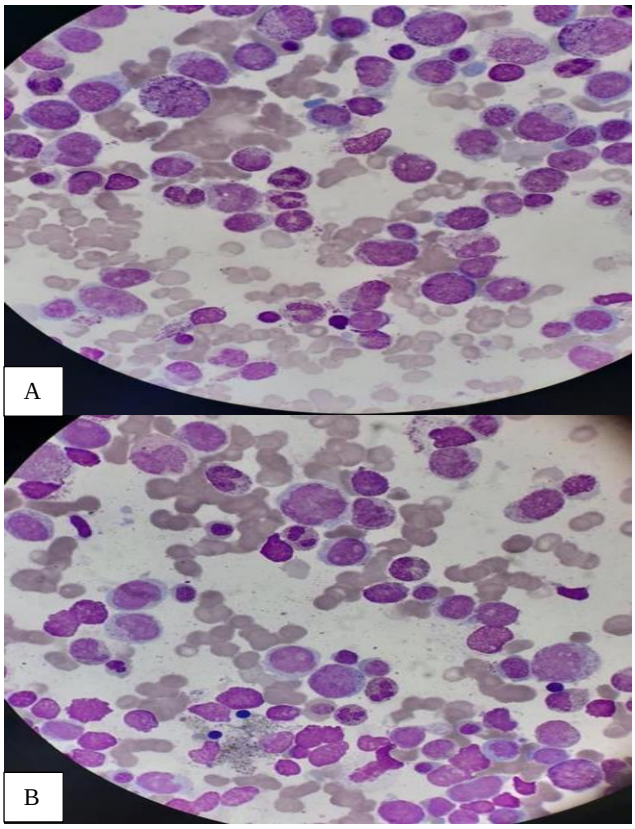

Figure 2 (A and B): Bone marrow aspirate, heterogeneous cellularity, 200 nucleated cells were counted,showing 29% of immature cells suggestive of myeloid blasts, with 1 to 3 nucleoli.

DISCUSSION

Malignant neoplasms in pregnant women can present between 0.07% to 1%; those of solid origin are more frequent, however leukemia is positioned in fourth place.[1,4,8] When it occurs, myeloid origin usually predominates in up to two thirds. The second and third trimesters is the age at which it is usually diagnosed, being only 23% diagnosed in the first trimester, the diagnosis is often delayed due to the little information available, However, the diagnostic approach and the criteria to establish the diagnosis does not differ with respect to the general population, being necessary from the blood smear to the bone marrow biopsy in order to perform all the cytogenetic and immunophenotype studies as well as molecular studies that will help us to classify the disease and to establish a prognosis and treatment.[2,5,8]

The characteristic clinical presentation is a woman with cytopenia's in the three cell lines and consequent symptomatology, causing weakness, infection, bleeding, among others. Pregnancy is not a contributing factor to the course of the disease, but the management involves various effects for the binomial, however, its identification requires immediate initiation of treatment regardless of gestational age because the delay of this, worsen maternal prognosis as has been seen in case reports that exist so far in which the woman dies up to 60% but this percentage varies according to literature reviewed either by complications of thetherapy used as the normal course of the disease, to mention other complications; disseminated intravascular coagulation, thrombosis and leukocytosis that increase maternal and fetal morbimortality.[1,5,7,8]

The management of patients will depend on the number of weeks of gestation at the time of diagnosis. In the few cases that are diagnosed in the first trimester, a therapeutic abortion can be considered because up to 20% of pregnancies end in delayed abortion and up to 40% in fetal death after chemotherapeutic treatment, as for the risk of malformations it is estimated that this ranges between 5-15%.[5] From the second trimester onwards, it is inferred from the information reported in retrospective studies that there are no maternal and fetal risks with the use of chemostatic drugs, since the complications resulting from the treatment are the same as those observed in the general population.[5,8]

The route of termination of pregnancy will not influence the prognosis of the couple, so this decision will correspond to the obstetrician and the presence or not of absolute indications of the patient and not for the presence of leukemia as such. However, it is advisable to consider the high risk of infections or hemorrhages due to pancytopenia caused by the drugs used if the treatment was performed within the last 3 weeks prior to birth.[2,4,5]

Survival of neonates is usually high up to 80-95%, however, much will depend on the prematurity of the neonate. The most observed affectation in newborns born to mothers with leukemia are fetal growth restriction, low birth weight and high risk of premature delivery, likewise the degree of maternal anemia or the presence of complications related to the diseasesuch as disseminated intravascular coagulation can influence fetal morbidity and mortality.[1,4]

The objective of this case is only to guide the obstetrician on the possibility of improving the prognosis of the mother

with a timely diagnosis and treatment, however, despite doing so, it does not ensure maternal and fetal survival since much will depend on the type of leukemia that is present, the time of evolution and the wishes of the patient. The outcome in this case was unfortunate as the fetus did not survive due to the low gestational age because of the need to terminate the pregnancy earlier than agreed by the consensus of specialists, in order to avoid possible complications and improve the maternal prognosis.

CONCLUSION

Leukemia is a rare entity in pregnant women, but not impossible, so it is important to know how to identify it since there are more resources available for its diagnosis. Cytopenia's, mainly globular and platelet cytopenia's, is a common finding in pregnant women, but we must know that it may involve serious entities and therefore require a greater approach for its identification. The rarity of the entity conditions the limited availability of scientific resources to establish a study protocol and management in these patients, so this type of publications are made with the aim of seeing the different management and outcomes and thus be able to guide readers to make decisions.

There are many factors that influence the outcome of this disease, such as the speed of diagnosis and initiation of treatment, the type of leukemia and the patient's wishes, which is why each patient's case must be individualized and decisions must be made in a multidisciplinary manner, always seeking to improve the maternal-fetal prognosis.

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