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Research Article

Endovenous Application of Alogenic AD-MSCs as Therapy for Abruption Placentae: A Case Report

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Abstract

Background: Premature placental abruption is a rare serious complication, with an incidence of 0.5-2%.

Objective: To present the clinical evolution of the premature detachment of the placenta with conservative management with stem cell transplantation.

Clinical case presentation: 40-year-old female, with the presence of placenta previa who comes to the hospital urgently, undergoes conservative management and application of stem cells; Until the fetus was delivered, and she presented preterm labor with a placenta previa, the interruption of the pregnancy by emergency cesarean section was indicated; obtaining a healthy 1880 newborn, and only the mother presented obstetric hemorrhage due to uterine hypotonia with a good response to management and during the puerperium, anemia developed that required hemotransfusion.

Conclusions: conservative management of placental abruption with stem cells is an alternative to improve the maternal-fetal prognosis.

Background

Premature abruption of the placenta (PPD) is a rare serious complication, with an incidence of 0.5-2% after 20 weeks of gestation (SDG). It involves some degree of separation of the placenta and can cause severe morbidity, such as disseminated intravascular coagulation, renal failure, massive transfusions, hysterectomy, fetal distress, maternal (1%) and fetal death (20-35% of cases) [1,2]. Management depends on fetal compromise (alive or dead), gestational age, and degree of maternal hemodynamic compromise; the most appropriate approach is sometimes an emergency cesarean section.

On the other hand, mesenchymal stem cells (MSCs) due to their high rate of proliferation, regeneration and their high degree of differentiation into different cell types through asymmetric divisions [3,4], have been considered in recent years, as a new option for use in regenerative medicine. MSCs can be obtained from embryonic and extra-embryonic tissue, as well as adult organs, some of these tissues being bone marrow, peripheral blood, umbilical cord, adipose tissue, etc., in addition to being autologous or donor (allogeneic). Its application in clinical research has been carried out as cell therapy for diseases such as Alzheimer's, amyotrophic lateral sclerosis, Huntington's, Parkinson's, cerebral and myocardial infarctions, spinal cord damage, immune alterations, osteoarthritis, restoration of ovarian function, etc., they release a wide selection of cytokines, chemokines and growth factors, with anti apoptotic, anti-inflammatory, proangiogenic and immunomodulatory characteristics, additionally help in tissue repair and replacement of damaged cells, which makes them highly attractive for clinical application [5- 9].

Therefore, the objective of this work is to show the evolution of secondary hematoma and bleeding in a patient with PPD, after administering intravenous MSCs, as an alternative therapy.

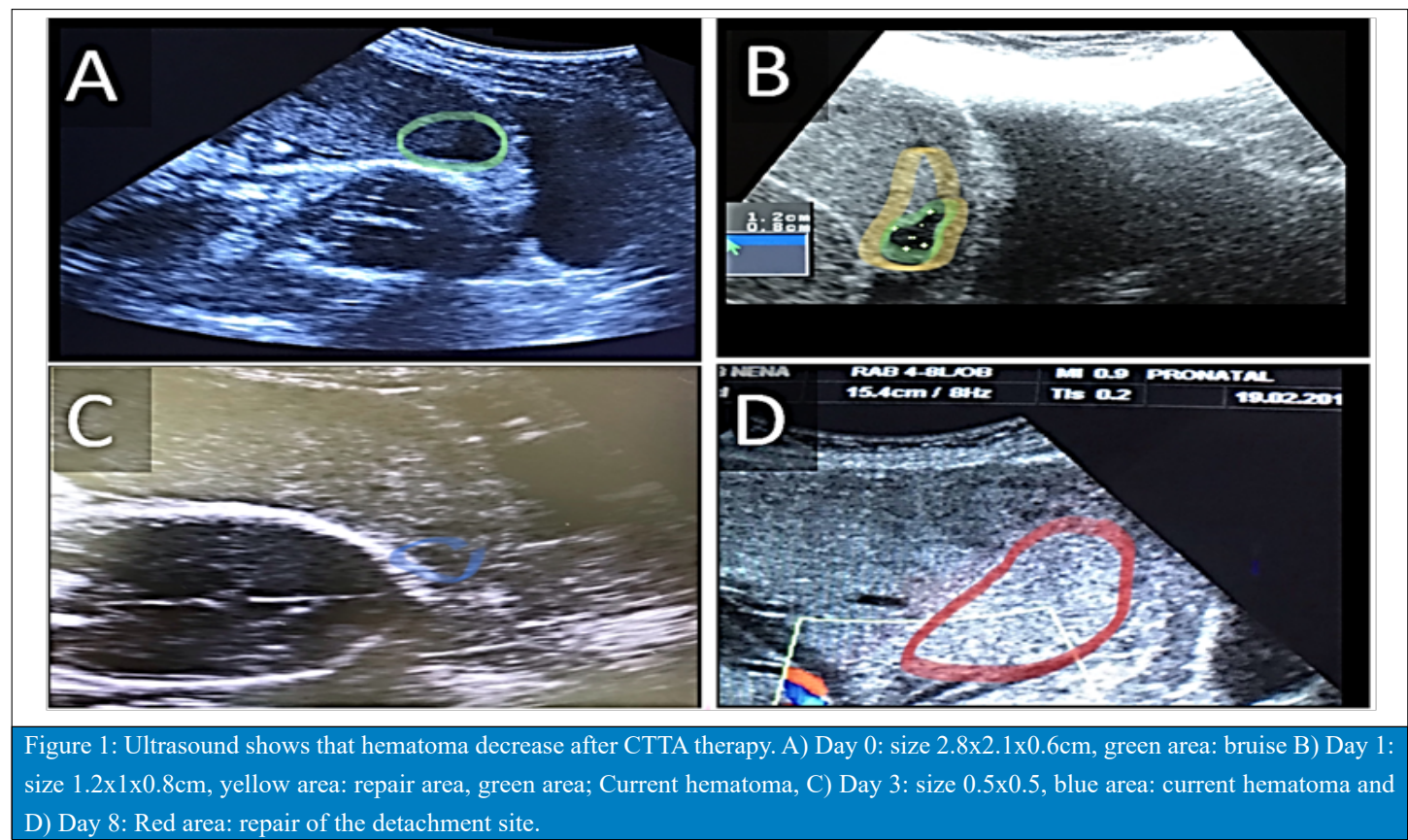
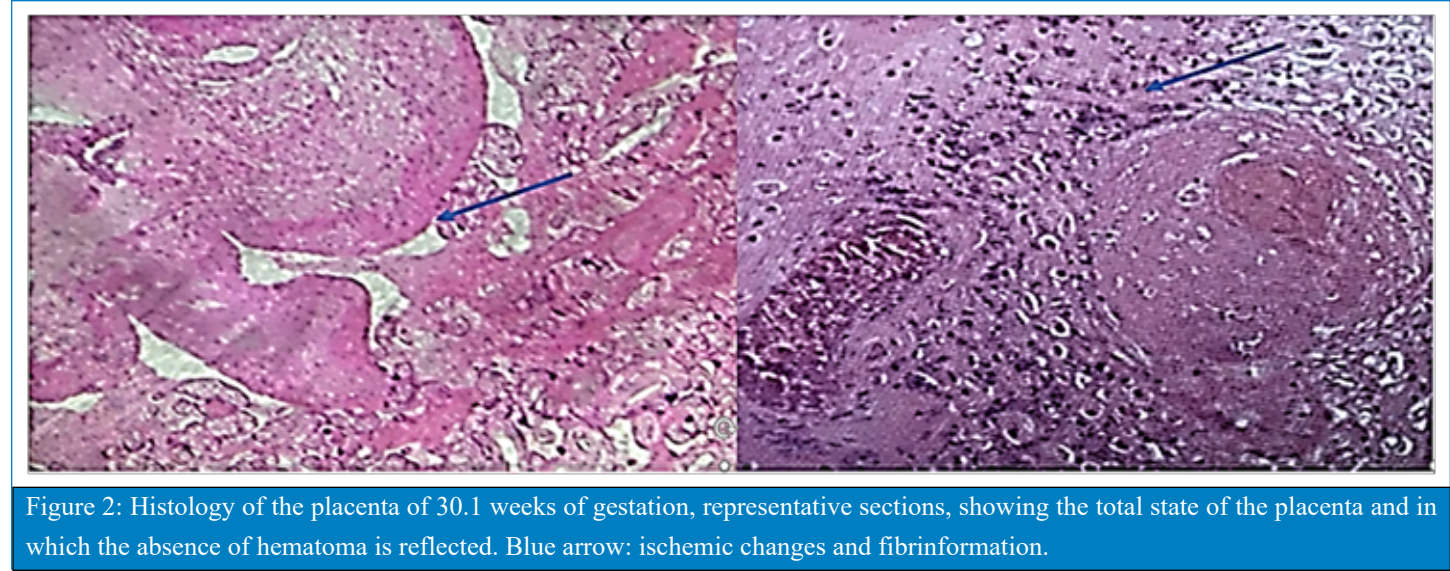
Case Presentation

40-year-old female, 1.68m, 66kg, with menarche at 13 years of age C: 1 (term), A: 4 (1st trimester). Current pregnancy with the presence of a total placenta previa, not definitive, from week 18. At week 25, she came to the Bité Médica hospital urgently with bright red transvaginal bleeding, described as scarce. Speculosc-

py shows heavy transvaginal bleeding. Endovenous resuscitation, emergency drug treatment and transvaginal mechanical compression are started, controlling bleeding and ensuring maternal and fetal stability. A follow-up obstetric ultrasound showed an image compatible with a retro placental hematoma in an anomalous insertion of the placenta. It was decided to stay in hospital, uterus-inhibitor treatment, pharmacological fetal maturation, fetal neuroprotective, empirical antibiotic and bed rest with antithrombotic prophylaxis with medium and high compression stockings. Additionally, it was decided to apply 10 million allogeneic adipose tissue mesenchymal stem cells (AD-MSCs) intravenously as adjuvant [99.97% viability, Method and proven markers: CD44, CD105, CD106, CD45, CD73, CD90 (analysis by flow cytometry with 3 fluorescence parameters), Instituto de Terapia Celular (ITC), Guadalajara, Mexico, license of Cofepris 14-TR-14-039-0009], due to persistence of hematoma and bleeding in week 26.5, observing a decrease in hematoma from 5cc to 1.7cc (after 24 hours of application). Time later, transvaginal bleeding persists in week 27.4, it is decided to apply allogeneic AD-MSCS [99.97% viability, Method and markers tested: CD44, CD105, CD106, CD45, CD73, CD90 (flow cytometric analysis with 3 fluorescence parameters), ITC, Guadalajara, Mexico, Cofepris license 14-TR-14-039-0009], doubling the initial dose to 20 million intravenously, observing remission of hematoma and control of bleeding. In control ultrasound, separation of amnion and chorion is observed, a new dose of 30 million intravenously of allogeneic AD-MSCS is decided [99.97% viability, Method and proven markers: CD44, CD105, CD106, CD45, CD73, CD90 (analysis by flow cytometry with 3 fluorescence parameters), ITC, Guadalajara, Mexico, Cofepris license 14-TR-14-039-0009], in week 28.2, with controls 48 hours later, separation repair is confirmed, without adding transvaginal bleeding and without observing hematoma (Figure 1).

At week 30.1 she presents uterine activity, with moderate transvaginal bleeding. LPR was entered for continuous binomial monitoring. Preterm labor with placenta previa indicated emergency interruption of pregnancy via the abdominal route.

The application of stem cells on 3 occasions helped the remission of the hematoma and the decrease in bleeding, showing an improvement in the fetal prognosis, avoiding immediate interrup-



tion of pregnancy, granting 5 weeks of intrauterine growth and thus helping to complete fetal maturity (Figure 1 and 2).

Surgical findings

Live female weighing 1880g, size 44 cm, apgar 9-9. Intraoperative complication with obstetric hemorrhage due to hypotonia, which

was controlled, however, required haemo-transfusion treatment during the puerperium due to the anemic syndrome.

Discussion

Currently, there is no treatment that restores the stability of the placenta when it detaches.

Conclusions

Conservative treatment is currently limited and there is no complementary therapy beyond maternal and fetal surveillance. It is suggested to develop a protocol for the application of CT in premature placental abruption, to confirm reproducibility of findings and to be able to establish this measure as a standard therapeutic option.

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