Case Report

Twin Reversed Arterial Perfusion (TRAP) Syndrome or acardiac twin: a case report in Madagascar

Lyn Z. A. Rabetsimamanga¹, Hary F. Rabarikoto²*, Maherandrianina F. V. Rajaonarivony³, Setriny M. Ravoavy², Hery R. Andrianampanalinarivo⁴

¹Department of Obstetrics and Gynecology, Pavillon Sainte Fleur, University Hospital Center JRA, Antananarivo, Madagascar
²Department of Obstetrics and Gynecology, Military Hospital Antsiranana, Madagascar
³Department of Pediatric Surgery, Soavianandriana Hospital Center, Madagascar
⁴Departement of Obstetrics and Gynecology, University Hospital Center GOB, Antananarivo, Madagascar

Received: 24 March 2018
Accepted: 30 March 2018

*Correspondence:
Dr. Hary F. Rabarikoto,
E-mail: hrabarikoto@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

TRAP syndrome is a rare complication of monochorionic twin pregnancy. It is characterized by the association of an acardiac twin with a healthy twin. The acardiac twin is a parasite who put the healthy twin at high risk of cardiac failure. We report a case in a 25-year-old Malagasy woman, primigravida, who had a consultation at gestational week 31 for significant dyspnea and a threat of premature delivery. Ultrasound scans discovered an acute polyhydramnios, fetus with anasarca and low cardiac activity, and a para-fetal mass. She gives birth to a male newborn and an acardiac twin without head an upper body. The first twin died short time after birth.

Keywords: Acardiac twin, Madagascar, Twin reversed arterial perfusion syndrome, Ultrasound

INTRODUCTION

TRAP syndrome or acardiac twin pregnancy is a very rare complication of monozygotic twins. It occurs only in 1 in 35,000 deliveries and in 1% of monozygotic twins.¹,² It is characterized by a presence of a vascular anastomosis between the acardiac and the healthy fetus. The acardiac twin does not have its own heart pump. The heart of the healthy fetus ensures its vascularization (pump twin). The blood flow of the acardiac twin is then reversed.³ We aimed to report one case in Madagascar.

RESULTS

It was a first pregnancy of a Malagasy at 25-year-old woman, who is a saleswoman. It was a spontaneous conception in non-consanguinous marriage. The pregnancy was considered unique and was followed clinically and biologically until 13 weeks of gestation. She had come to consultation at gestational week 31 for significant dyspnea. The uterine height was 39cm. Her vaginal examination revealed cervical dilatation at 4 cm, 70% effaced, vertex applied. Ultrasound scans discovered an acute polyhydramnios, fetus with anasarca and low cardiac activity, and a para-fetal mass evoking a twin acardiac.

The patient, after being fully consulted and informed for poor prognosis of condition of anasarca decided for vaginal birth. Two hours after her admission, she gives birth to a 1200g male newborn that is followed by the expulsion of an 1800g acardiac twin. This sex was not differentiated, and the insertion of the umbilical cord was low (Figure 1). The thighs were large, the legs short and the toes incomplete (Figure 2). Severe subcutaneous...
edema and anal imperforation were associated. The first twin died short time after birth.

On examination of the placenta and umbilical cords, the anastomosis was not visible.

Figure 1: Front view of the acardiac twin.

Figure 2: Posterior view of the acardiac twin.

DISCUSSION

TRAP syndrome or acardiac twin is exclusively associated with monochorionic twin pregnancies. The physiopathology of this complication is uncertain. The presence of placenta vascular anastomosis is common in monochorionic twins and alone it is not enough to develop TRAP syndrome. It could be observed when the low oxygen and low nutrient blood from the normal fetus (pump twin), instead of going back to the placenta passed directly through an anastomosis to the umbilical artery or in the systemic blood flow of the acardiac twin. It is creating a reversed arterial perfusion. Generally the anastomosis is arterio-arterial, but veno-venous and arteriovenous anastomosis could appear. This arterio-arterial anastomosis can be located either on the surface of the placenta or in the placental arterial system, or more rarely as a direct connection of the fetal umbilical cords. Nigam A et al hypothesized that compression of the cephalic pole of the embryo inhibiting curving and fusion of the primitive heart tube is the basic cause resulting in non-formation of the heart and other organs.

Acardiac twin can classified in four types: acephalic (without head), anceps (with some cranial structures and / or nervous tissue), acomas (with head but without trunk) and amorphous (without head an upper body). This last type was observed in the case that we report and it is observed in the most cases in literature.

TRAP syndrome could have heavy circulation consequences in the healthy fetus. This can go up to the development of cardiac insufficiency, polyhydramnios, and consequently heart failure. The mortality rate of the pump twin is high, it is more than 50%. In the case that we report, the condition of anasarca is a sign of advanced heart failure.

Concerning the diagnostic means, acardiac twin can be detected on ultrasound at gestational age of 13 weeks. An holoprosencephaly, an encephaly, lack of facial mass, anophthalmia, cleft palate, absent or rudimentary limbs, diaphragmatic or esophagus atresia, absence of thorax and heart, absence of liver and gallbladder, subcutaneous edema and single umbilical artery in one of the twins must evoke an acardiac twin. Early diagnosis would allow active management. Currently, the possibility of treatment is pregnancy termination, expectation management, intrafetal ablation, or interventional anastomosis sclerotization using alcohol ablation, thermal ablation, laser ablation, bipolar coagulation or histoacryl to occlude the circulation of the acardiac twin and interrupt the TRAP sequence. None of these techniques is available in Madagascar. If TRAP syndrome was diagnosed early in the case that we report, expectant management and regular ultrasound examination and cardiotocographic monitoring would have been performed to allow fetal extraction by cesarean section as soon as signs of heart failure are seen in the normal fetus at a term of fetal viability.

CONCLUSION

Acardiac twin is a parasite. Early diagnosis helps to preserve the healthy twin when different therapeutic means are available. In the opposite case, it makes it possible to plan the surveillance and to extract the fetus in the event of cardiac decompensation.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Tayal T, Kaul A. Intrafetal Laser Ablation of Umbilical Vessels in Acardiac Twin with Successful Outcome. The Journal of Obstetrics and Gynecology of India. 2012;62(S1):S43-S45.
2. Guigue V, Schwetterle F, Arbez-Gindre B. The case of a nacardiac headless twin, review of the literature. J Gynécol Obstet α Biol Reprod. 2007;36:293-7.
3. Ferianec V, Redecha M, Papcun P, Križko M Jr, Hollý I, Holomáň K. Successful ablation of acardiac twin with Histoacryl. Taiwan J Obstet Gynecol. 2016;55(1):109-11.
4. Nigam A, Agarwal R, Saxena P, Barla J. Acardiac aneceph: a rare congenital anomaly. BMJ Case Rep. 2014.
5. Anca FA, Negru A, Mihart AE, Grigoriu C, Bohilţea RE, Šerban A. Special forms in twin pregnancy - ACARDIAC TWIN/ Twin reversed arterial perfusion (TRAP) sequence. Journal of Medicine and Life. 2014;8(4):517-22.
6. Moore TR, Gale S, Benirschke K. Perinatal outcome of forty-nine pregnancies complicated by acardiac twinning. Am J Obstet Gynecol. 1990;163:907-12.
7. Kalyani R, Bindra MS. Twin Reversed Arterial Perfusion Syndrome (TRAP or Acardiac Twin)-A Case Report. J Clin Diagn Res. 2014;8(1):166-7.
8. Hecher K, Hackeloer BJ, Ville Y. Umbilical cord coagulation by operative microendoscopy at 16 weeks’ gestation on acardiac twin. Ultrasound Obstet Gynecol. 1997;10:130-2.

Cite this article as: Rabetsimamanga LZA, Rabarikoto HF, Rajaonarivony MFV, Ravoavy SM, Andrianampanalinarivo HR. Twin Reversed Arterial Perfusion (TRAP) Syndrome or acardiac twin: a case report in Madagascar. Int J Res Med Sci 2018;6:1790-2.