Case Report:
Acardiac Parabiotic Fetus: A Rare Complication of Twin Pregnancy

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Abstract: Acardiac parabiotic fetus is sequelae of complication of monochorionic monoamniotic twin pregnancy also known as Twin Reversed Arterial Perfusion Sequence (TRAP). It is rare affecting 1 in 35,000 births and 1 % of monozygotic twins. Acardiac parabiotic twin commonly known as parasite occurs rarely and may lead to high output cardiac failure, hydrops or premature delivery in the pump fetus. In this report, we present a 23 years old primigravida with twin pregnancy, with twin reversed arterial perfusion sequence with one of the twins being acardiac anceps and the other normal pump fetus. This association is relatively uncommon and therefore rarely documented.

Key Words: Acardiac parabiotic fetus, Twin Reversed Arterial Perfusion Sequence

Introduction:
Twin Reversed Arterial Perfusion Sequence is the rarest complication in monochorionic monoamniotic twin pregnancy. It is one of the most bizarre congenital malformations occurring in multiple pregnancies. It is known as acardius orchioangiopagus parasiticus, which is a rare complication of monochorionic twins. TRAP sequence is characterized by a structurally normal pump twin perfusing an anomalous recipient twin via an artery-to-artery anastomosis in a reverse direction. The anomalous foetus is either acardiac or has severely anomalous cardiac structure.

Case Report
Ultra Sound scan of a 23 years old primigravida at period of gestation (POG) 32 weeks with previously undiagnosed twin pregnancy revealed a monochorionic monoamniotic twin pregnancy with one normal fetus at 32 weeks of gestation. The second fetus showed absence of calvarial bones with hydrocephalus and multiple cysts in the brain (Figures: 1a & b). Facial bones were demineralised with non visualization of nasal bones, orbits and mouth. Vertebral column was poorly seen. Thorax was poorly differentiated with a rudimentary heart like structure having a heart rate of 73 beats per minute (Figure: 1c). Abdomen was also not defined and no abdominal organs were appreciated. Bilateral lower limbs were incompletely formed till knees and femora appeared demineralised (Figure: 1d). Upper limbs were not visualized. This fetus was having oedema all around suggestive of anaasarca. There was presence of polyhydramnios. At 34 weeks of gestation, patient went into spontaneous labour pains and caesarean section was done. The first twin was a normal female fetus without any complications. The acardiac twin was born dead without any signs of maceration. It had a malformed head with no skull bones felt. The facial structures were poorly developed. The neck, thorax and abdominal region were poorly developed. Upper limbs were not visualized. Lower limbs were poorly developed. It had an umbilical cord with a single artery, which was inserted to the pump twin shared placenta (Figure: 2). All these signs suggested acardiac twin of anceps type.

Discussion:
Acardiac parabiotic twin is a rare and bizarre phenomenon, which occurs only in monochorionic twin pregnancies through the arterial to arterial and venous to venous anastomoses within the placenta.1,2 The flow direction in the umbilical arteries and veins of the recipient fetus is reversed and tissue perfusion of this non-viable fetus is accomplished by communications in the placenta from the circulatory system of the co-twin referred to as the “pump twin”.3,4 Acardiac monster was 1st described by Benedetti in 1533. Twin reversed arterial perfusion (TRAP) was defined...
by Greenwald in 1942. The acardiac twin (recipient twin) develops severe anomalies that are incompatible with life. Four categories of this condition have been described depending upon the degree of cephalic & trunkal maldevelopment.

Fig 1: Ultrasound images showing malformations in the twin fetus (see text for details)

Fig 2. Acardiac twin

1. Acardiac Anceps: This type has relatively well developed fetus. Parts of the brain, skeleton of face, meninges & scalp hairs are present. Entire vertebral column and all four extremities are intact. Oesophagus, stomach, intestines, lungs, adrenals, kidneys, bladder, testicles & ovaries are present. Diaphragm is absent. Remnants of heart is present. Large fluid filled spaces (cervical hygromas) on either side of cervical vertebrae are seen.

2. Acephalic Acardiac Fetus: This type has absence of head & thoracic organs. Ribs are usually present, thoracic vertebra are either missing or decreased in number. Remnants of liver, spleen, kidney & intestines are present. Pelvis & lower extremities are usually well developed but arms may be absent.

3. Acardiac Acormus: Rarest type and is also called as bodyless head.

4. Acardiac Amorphus: This lesion has lump of tissue covered by skin. It contains bone, cartilage, fat and muscles. Mortality of acardiac twin is universal either in utero or at the time of delivery. Normal pump twin is at increased risk because of high cardiac output, congestive cardiac failure, hydrops and polyhydramnios. Normal fetuses may die of prematurity & respiratory distress syndrome (RDS). The overall mortality of pump twin is approximately 50-75%. Management strategies for pump twin include tocolytic agents and volume reduction amniocentesis to treat preterm labor and frequent interval monitoring studies for detection of signs of congestive heart failure. If fetal distress develops, invasive procedures, such as ligation of the cord of acardiac twin or radiofrequency ablation are done.

Conclusion
Radiologist and obstetrician should be aware of this rare condition in monochorionic monoamniotic twin pregnancy because of its implication for proper patient management.

References