Case report

Twin reversed arterial perfusion (TRAP) Sequence: a case report in Fallujah Maternity and Children Hospital, Fallujah, Iraq.

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Abstract:

Twin reversed arterial perfusion (TRAP) sequence is a rare complication of multiple pregnancy caused by defects in early embryogenesis. The pump twin supplies the acardiac recipient twin with blood, and although the pump twin is usually structurally normal, congenital anomalies have sometimes been reported. We report a case of twin reversed arterial perfusion sequence with feet polydactyly in the surviving pump twin.

Key words: TRAP sequence; twin pregnancy; polydactyly; Fallujah

1. Introduction;

Twin reversed arterial perfusion (TRAP) sequence is a rare complication of monozygotic multiple pregnancy. The presence of an acardiac twin occurs in one of every 35,000 twin pregnancies and in 1% of monochorionic twin pregnancies. In cases of TRAP, the mortality rate for the normal (pump) twin is reported to be approximately 50%. The majority of pump twins are congenitally normal, but anomalies are sometimes observed, including cardiogenic defects, gastroschisis and skeletal abnormalities.

Polydactyly is a condition in which a person has more than five fingers per hand or five toes per foot. This trait involves only one gene that can cause several variations. In most cases, this is not caused by a genetic disease.

We hereby report a case of monochorionic twin pregnancy, the 1st twin born with feet polydactyly, the 2nd was a case of twin reversed arterial perfusion sequence.

2. Case report:

On 17-7-2013, a 22 years old, gravida 2, para 0, abortion 1, full term lady presented to the delivery room in Fallujah maternity and children hospital with labour pain with no history of any prenatal care.
she is from rural area in Fallujah (west of Iraq). She gave no history of any familial congenital anomaly and there was no history of consanguinity with her husband. She was not hypertensive or diabetic, non smoker, non alcoholic and has no history of using any teratogenic drugs or exposure to any irradiation. She has a history of 8 weeks miscarriage few months before her last pregnancy. Ultrasound examination at the delivery room revealed the diagnosis of monozygotic twin, one was normal & the 2nd was diagnosed as (abnormal) with difficulty in visualization of the fetal parts and gender. She have been referred for cesarean section delivery as an emergency at about 9 pm as there was no progress in labour. At delivery, the 1st twin was female, 2500 gm body weight born with polydactyly (an extra toe) of both feet with no other anomaly in other parts of her body, she have been discharged home about 10 hours after delivery on her family's responsibility, the 2nd twin was grossly abnormal with no differentiation of the body parts, it looked like amass weighing 1500 gm, which was divided in to 2 parts, one small, rounded representing the head with no eyes & nose with small skin tags on both sides representing the ears and one larger, elongated part representing the rest of the body with no clear differentiation of chest, abdomen, pelvis or genitalia and no limbs (Fig 1 & 2). on auscultation there was a sound of beating vanished in less than 10 minutes after birth and it may represent placental circulation.

Figure 1: TRAP sequence (anterior view) 

Figure 2: TRAP sequence (lateral view)

3. Discussion;

Fallujah is a city in the Iraqi province of Al Anbar, located roughly 69 kilometers west of Baghdad on the Euphrates with about 600,000 population.

Anecdotal reports indicated increasing incidence of birth defects in the years following US attacks in 2004 which proved to be due to irradiation\textsuperscript{5,6,7,8}. The health system, although it showed some improvement in the last 2 years, is still underdeveloped and the security situation in the city is still bad, many cases of birth defects are still underdiagnosed or not documented because of that. This was the 1st documented case of TRAP sequence in Fallujah Maternity and Children Hospital, but there are many cases of polydactyly, most are not familial and appear for the 1st time.

TRAP sequence is a rare complication of monochorionic multiple pregnancy. It is classified according to the degree of cephalic and truncal maldevelopment. The first type is acardiac acephalus, where no cephalic structures present. The second is acardius-anceps where some cranial structure and
or neural tissue present, for which our case may belong. The third is acardius-acormus with cephalic
structure but no truncal structures present. The fourth type is acardius amorphus with no
distinguishable cephalic or truncal structure. The first cases of acardia were reported by Benedetti in
1533 and Benedictus in 1539, and later by Geoffroy in 1836.

Several theories had been postulated to explain TRAP sequence. The most accepted theory is that
artery-to-artery anastomosis between the monochorionic twins in the first trimester is the fundamental
event in development TRAP sequence. This abnormal circulation may result in early tissue hypoxia
with resultant disruption of development of the cardiovascular system and a cascade of disruption of
organ development in the recipient twin. Because the blood first perfuse the lower segment of the
anomalous twin, the lower limbs and scrotum receive comparatively more oxygen than the upper
segment of the body.

The anomaly is fatal for the recipient twin. The pump twin may develop heart failure because of an
increased cardiac demand. Numerous obstetric complications are associated with TRAP syndrome such
as hydrops fetalis, polyhydramnios, umbilical cord accidents, preterm delivery or fetal death of the
pump twin. The prominent features of the recipient twin are: total or partial absence of cranial
vault, holoprosencephaly, absent facial structures, anophthalmia, microphthalmia, cleft lip, cleft palate,
absent or rudimentary limbs, diaphragmatic defects, absent lungs and heart, esophageal
atresia, ventral wall defects, ascites, absent liver and gallbladder, edema of the skin and single
umbilical artery.

Risk for cardiac insufficiency in the pump twin increases proportionally to the relative increase in
weight of recipient-to-pump twin. Risk for congestive heart failure increases to 94% as the acardiac
twin achieves a size more than half the size of the pump twin. At this juncture, some form of
minimally invasive intervention is warranted to occlude vascular supply to the acardiac
twin through cord occlusion techniques or intrafetal ablation. Cord occlusion has been attempted by embolization,
cord ligation, laser coagulation, bipolar diathermy, and monopolar diathermy, while intrafetal ablation
has been performed with alcohol, monopolar diathermy, alcohol, monopolar diathermy, interstitial
laser, and radiofrequency, with radiofrequency ablation, greater than 90% survival can be achieved in
monochorionic diamniotic pregnancies complicated by TRAP sequence.

An exact preoperative evaluation of the vascular flow including Doppler sonography is however
mandatory.

4. Consent

Consent for publication from both parents have been obtained.

5. Conclusion:

Twin-Reversed Arterial Perfusion (TRAP) sequence is a rare complication of monozygotic multiple gestation.
Accurate antenatal diagnosis is essential to improve the prognosis of this rare entity. Though many patients can benefit from conservative treatment, minimally invasive antenatal treatment
modalities for the vascular anastomosis improve the outcome of the pump twin.

5. References:

twin-to-twin transfusion syndrome after the death of the donor co-twin in the second trimester.