

Diclofenac-Induced Intrauterine Ductal Closure

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Dear Editor,

In utero constriction or closure of the patent ductus arteriosus (DA) is a rare condition that has been described secondary to structural heart disease, idiopathic constriction or medication [1]. Non-steroidal anti-inflammatory drugs (NSAIDs) such as indomethacin are the most commonly seen causative agents and are often used to prevent preterm labor and polyhydramnios. These drugs increase the risk of premature closure of the duct if taken after the 27th week, and the risk increases exponentially after the 34th week of gestation [2]. Premature closure of the DA can lead to some serious life-threatening intrauterine complications such as congestive heart failure, fetal hydrops, oligohydramnios, and even intrauterine death [1]. Herein, we present a case of prenatal ductal closure after ingestion of a single dose of diclofenac at the 37th week of gestation.

A 31-year-old woman in her uneventful third pregnancy was referred to our clinic for fetal echocardiography owing to the detection of some evidence of premature ductal closure by routine fetal ultrasound examination at the 37th week of gestation. She had no history of gestational diabetes or congenital heart disease in the current or previous two pregnancies. She also had no history of preterm labor requiring any NSAIDs. It was learned from the patient that she had taken a single dose of diclofe-

nac for headache 2 days before. Fetal echocardiographic examination showed mild right ventricular hypertrophy and moderate tricuspid valve regurgitation. A turbulent flow through the constricted DA was seen on color Doppler examination. Pulsed Doppler revealed a significantly increased peak systolic velocity of 2.46 m/s. Any other possible structural lesions that could have caused narrowing of the DA were not found. Due to the proximity of the term gestation and in order to prevent possible fatal complications, an uneventful cesarean section was performed.

Patent DA plays a crucial role in the continuation of the fetal circulation in uterine life. Blood flow bypasses the non-functional fetal lungs through the DA. Premature constriction can therefore lead to increased stress on the right side of the fetal heart and also result in some serious life-threatening conditions. Indomethacin is a more prevalent drug that has been described for ductal constriction. In some cases it will cause instant constriction and also even complete closure of the ductus [2], but in other cases the ductus can remain open in spite of repeated doses [3]. This condition can be caused by differences in drug metabolism.

Diclofenac is a NSAID that acts by inhibiting the formation of prostaglandins [4]. It is commonly used for pain relief and

has a similar effect on the fetal DA as indomethacin. In previous reports the closure of the fetal DA following diclofenac treatment is very rare and also with repeated doses [5]. Ductal constriction was seen after a single dose of diclofenac ingestion in the present case.

Fetal echocardiography is the most important diagnostic tool for assessment closure or constriction of the DA. It can be easily diagnosed by careful assessment of the aortic arch with color and pulsed-wave Doppler. In former studies, a peak systolic velocity >1.4 m/s along with a diastolic peak flow >0.35 m/s were considered as ductal constriction [6]. These values gradually increase with advancing gestational age [1]. Similar to these data, we found a peak systolic velocity of 2.46 m/s through the ductus.

In conclusion, all pregnant women should be informed by an obstetrician about the side effects of NSAIDs on the fetus, especially in third-trimester pregnancies where such repeated or single-dose drugs should be assessed carefully by fetal echocardiography in terms of preterm constriction of the DA. Also, as in present case, where the affected fetus was near term, prompt delivery appeared to be the best option for preventing life-threatening pre- and postnatal complications.

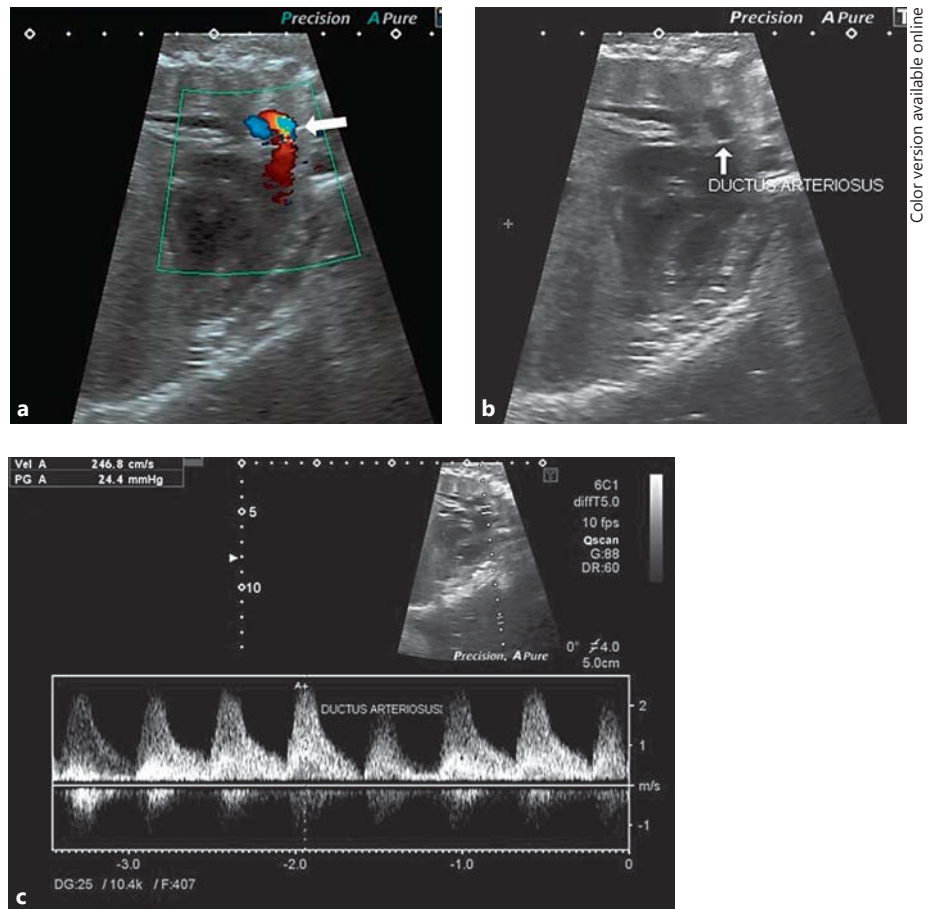


Fig. 1. Color Doppler (a) and two-dimensional (b) echocardiographic images of the constricted DA. Pulsed Doppler waveform (c) measured within the ductal arch with peak systolic velocity of 2.46 m/s (normal ≤ 1.4 m/s).

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