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RESEARCH ARTICLE

RARE CASE OF ATRIAL FLUTTER IN A PRETERM NEWBORN IN AN STRUCTURALLY NORMAL HEART

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ABSTRACT

Cardiac arrhythmias are an important aspect of fetal and neonatal medicine. Premature complexes of atrial or ventricular origin are the main cause of an irregular heart rhythm. The finding is typically unrelated to an identifiable cause and no treatment is required. Tachyarrhythmia most commonly relates to supraventricular re-entrant tachycardia, atrial flutter, and sinus tachycardia. Supraventricular tachycardia (SVT) is one of the most common conditions requiring emergency cardiac care in neonates. Atrial Flutter is the most common SVT. Atrioventricular re-entrant tachycardia utilizing an atrioventricular bypass tract is the most common form of SVT presenting in the neonatal period. Here is high likelihood for spontaneous resolution for most of the common arrhythmia substrates in infancy. Pharmacological agents remain as the primary therapy for neonates.

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INTRODUCTION

Tachycardia is defined as a persistent increase in heart rate above 180 beats/min and bradycardia is described as a persistent heart rate less than 100 beats/min for neonates. Asymptomatic and temporary rhythm abnormalities occur constantly at the fetal and neonatal period but clinically significant arrhythmias are considerably rare. The incidence of arrhythmias for neonatal period is about 1% and 1–3% in late pregnancy. The vast majority of supraventricular tachycardia (SVT) seen in neonatal age group without congenital cardiac anomalies are atrioventricular re-entry tachycardia (AVRT) facilitated by an accessory pathway (AP) and atrial flutter (AFL) which is seldom encountered outside the neonatal period. (2) Atrial flutter refers to an arrhythmia, or an abnormal heart rhythm that involves an electrical circuit formed in the atrium, the upper two chambers of the heart. Normal electrical conduction in the heart starts with the generation of electricity in the sinus node in the upper portion of the right atrium. Electricity moves from the sinus node through the atrium. From there, it is transmitted to the AV node to the ventricles. As electricity passes to the ventricles, the heart muscle contracts. Atrial flutter has a low incidence in children.

It is characterized by a rapid atrial rate of approximately 300 beats per minute (bpm) or more and distinctive "sawtooth" P waves, called F waves (1). Atrial flutter may also develop in patients with normal heart anatomy, mainly in newborns or in fetuses. The newborns' ECG tracing shows an atrial flutter wave (so-called "sawtooth"), which is seen in leads II, III, aVF, V1. Clinical features depend on the frequency of the ventricular rate. 1:1 atrioventricular conduction concerns the patients with a coexisting accessory pathway as it predisposes to ventricular fibrillation. However, because of an accompanying atrioventricular block, the ventricular rhythm is usually slower than the atrial rhythm. Atrial Flutter (AFL) is a rare but potentially lethal arrhythmia. Therefore, it is essential to know how to treat it (3). Atrial flutter refers to an arrhythmia, or an abnormal heart rhythm that involves an electrical circuit formed in the atrium, the upper two chambers of the heart. Normal electrical conduction in the heart starts with the generation of electricity in the sinus node in the upper portion of the right atrium. Electricity moves from the sinus node through the atrium. From there, it is transmitted to the AV node to the ventricles. As electricity passes to the ventricles, the heart muscle contracts. Top of Form

Case presentation: A pregnant female presented at 36weeks of gestation in labour. The fetus was noted to be tachycardic on fetal monitor. So Mother was taken to emergency caesarean section, baby was cried immediately after birth with 2.8kg male baby. Postnatally, baby has tachycardia with heart rates in the 200-240 bpm range. So baby was admitted in NICU and hemodynamically stable, monitor was connected along with ecg leads shows SVT. So inj adenosine was given initially heart rate reduced for 20 secs again rebound to 240bpm, second dose of adenosine was given still no reduction in heart rate, after adenosine ecg show flutter waves during drop in heart rate suggestive of atrial flutter so cardioversion was done after that return of sinus rhythm. After 4hrs of first attack again increase heart rate so 2nd cardioversion was given. So inj amiodarone infusion and oral propranolol was started for rhythm and rate control. 2D ECHO was Done shows no structural abnormalities. After that no repeated attack and pt was stable ,later pt had culture positive sepsis so treated with iv antibiotics and suspected down syndrome as baby has syndromic features so karyotyping sent which was normal .As baby was clinically stable ,so discharged with oral propranolol for 3 month and advise to follow up every 15days.

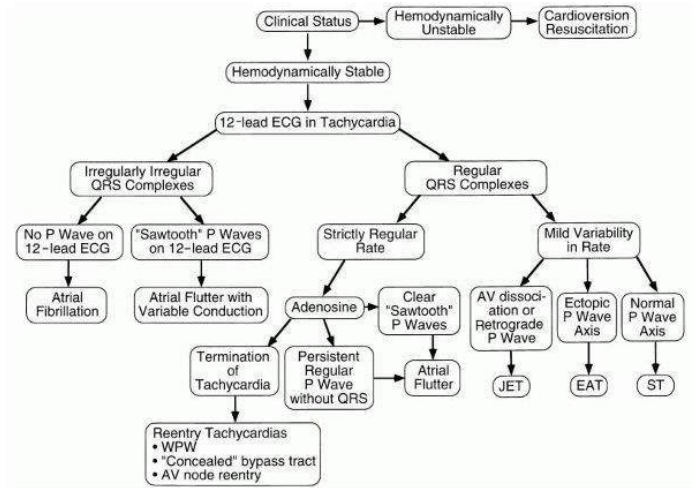


Fig. 3. Approach to newborn with tachycardia



Fig. 1. On Admission Ecg



WhatsApp Video 2023-10-21 at 7.26.1

Video 1. During Adenosine Injection



Fig. 2. After inj adenosine ecg flows flutter waves

DISCUSSION

Cardiac arrhythmia in newborn infants is rare. The incidence varies between 1 and 5% of neonates who are admitted to neonatal intensive care units. Atrial flutter in newborn generally occurs in the first 7 days of life. Sex distribution is known to be equal. Atrioventricular re-entry is the most common mechanism determined for supraventricular tachycardia in both the fetus and newborn (4). Direct current cardioversion appears to be most effective at establishing sinus rhythm. After these therapies sinusoidal rhythm detected on patient's ECG and his general status went on normal. In AFL without associated congenital heart disease especially, relapse rates of under 10% after initial treatment are described. In the case of relapse, episodes predominantly occurred within the first 72 h after the initial electric countershock (5). Follow-up is needed to check for signs of the arrhythmia recurrence, as well as possible side effects of certain treatments. Neonates with AFL generally have an excellent prognosis once in sinus rhythm with a low risk of recurrence, and long-term antiarrhythmic therapy is unlikely to be necessary.

CONCLUSION

Atrial flutter rare in newborn, early ECG and recognition of rhythm helps in diagnosis and treatment, which prevents lethal complications. Early recognition and treatment prevent recurrence and require regular follow up.

REFERENCES

Low S, Kiper C, Armstrong A, Cua CL. Echocardiographic diagnosis of atrial flutter in a neonate. *Echocardiography*. 2018 Sep;35(9):1439-1441. doi: 10.1111/echo.14111. Epub 2018 Aug 6. PMID: 30080938.

Oeffl N, Krainer M, Kurath-Koller S, Koestenberger M, Schwabegger B, Urlesberger B, Mileder LP. Cardiac Arrhythmias Requiring Electric Countershock during the Neonatal Period-A Systematic Review. *Children (Basel)*. 2023 May 5;10(5):838. doi: 10.3390/children10050838. PMID: 37238386; PMCID: PMC10263252.

Wójtowicz-Marzec M, Wysokińska B, Respondek-Liberska M. Successful treatment of neonatal atrial flutter by synchronized cardioversion: case report and literature review. *BMC Pediatr*. 2020;20:370

Wren C. Cardiac arrhythmias in the fetus and newborn. *Semin Fetal Neonatal Med* 2006; 11: 182-190.

Yılmaz-Semerçi S, Bornaun H, Kurnaz D, Cebeci B, Babayigit A, Büyükkale G, et al. Neonatal atrial flutter: three cases and review of the literature. *Turk J Pediatr*. 2018;60:306-9.