Neonatal lupus erythematosus with congenital heart block in twins

Bloc auriculo-ventriculaire complet congénital secondaire à un lupus érythémateux néonatal chez des jumeaux

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RÉSUMÉ

Introduction : Le lupus érythémateux néonatal est une maladie auto-immune acquise rare causée par le passage transplacentaire des anticorps maternels SSA/Ro, SSB/La ou Ribonucléoprotéines U1. Les manifestations cliniques les plus fréquents sont les éruptions cutanées, des lésions cardiaques, la thrombocytopénie, l'anémie et l' hépatosplenomegalie. Le bloc auriculo-ventriculaire congénital est habituellement irréversible nécessitant un stimulateur cardiaque dans deux tiers des cas.

Cas cliniques : Nous rapportons deux jumeaux atteints de lupus érythémateux néonatal avec bloc auriculo-ventriculaire complet congénital. Les nouveau-nés sont nés par césarienne à 38 semaines de gestation avec une fréquence cardiaque à 70 battements par minute. Les deux jumeaux et la mère étaient positifs pour les anticorps antinucléaires, anti -SSA et anti- SSB. Les 2 nouveaux nés ont reçu au douzième jour de vie un stimulateur cardiaque implantable. L'évolution a été rapidement favorable avec une fréquence cardiaque autour de 110 battements par minute. Le recul est de 2 ans. Les jumeaux sont actuellement asymptomatiques.

Conclusion : Le bloc auriculo-ventriculaire complet congénital est la manifestation la plus grave du lupus érythémateux néonatal associé à une morbidité et une mortalité importantes.

Mots-clés

Lupus érythémateux ; bloc auriculo-ventriculaire congénital ; anti –SSA ; nouveau né

SUMMARY

Background: Neonatal lupus erythematosus is an uncommon acquired autoimmune disease caused by transplacental passage of maternal antibodies SSA/Ro, SSB/La or U1 ribonucleoproteins. The most common clinical manifestations are skin rash, cardiac lesions, thrombocytopenia, anemia and hepatosplenomegaly. Complete congenital heart block is usually irreversible needing a pacemaker implantation in two-thirds of cases.

Cases report: We report neonatal lupus erythematosus with complete congenital heart block in twins. Newborns were delivered by caesarean section at week 38 of gestation with a heart rate regular at 70 beats per minute. Both twins and mother were positive for antinuclear, anti-SSA, and anti-SSB antibodies. Twins received single-chamber pacemaker implants at day 12 of life. The evolution was immediately favorable with a heart rate around 110 beats per minute. The follow-up was 2 years. The twins are currently asymptomatic.

Conclusion: Complete congenital heart block is the most serious manifestation of the neonatal lupus erythematosus associated with significant morbidity and mortality.

Key-words

Lupus erythematosus; congenital heart block; maternal anti-SSA/Ro; newborn

Neonatal lupus erythematosus is an uncommon autoimmune disease [1,2] characterized by a transient rash, cardiac lesion, hematologic abnormalities and liver impairments [3-5]. We report neonatal lupus erythematosus with complete congenital heart block in twins. Both twins and mother were positive for antinuclear antibodies, anti-SSA/Ro and anti-SSB/La.

CASE PRESENTATION

A healthy asymptomatic 41-year-old woman with twin pregnancy, primigravidia, was referred to a pediatric cardiologist at 30 weeks of gestation after detection of a decreased fetal heart rate upon obstetric ultrasonography examination.

The fetal echocardiographic study, performed for the twins, revealed a complete congenital heart block with a structurally normal heart. The mother's serum was positive for antinuclear antibodies, anti-SSA/Ro, and anti-SSB/La. Anti-DNA, anti-Sm and anti-U1-RNP antibodies were not detected. A diagnosis of undifferentiated connective tissue disease was established for the mother. Monitoring and follow-up was every 2 to 3 weeks by a physician internist and a pediatric cardiologist until delivery.

The twins were delivered by caesarean section at week 38 of gestation. Birth weight was 2450 g for the male and 3200 g for the female neonates. The heart rate was regular at 70 beats per minute in newborn twins. There were no areas of depigmentation, no lymph-adenopathy, bleeding spots, rash or hepatosplenomegaly.

Laboratory investigations showed normal level of hemoglobin, total leukocytes and platelets. Liver function tests were within normal limits. Anti-nuclear antibody was found to be strongly positive with a titer of 1:3000 (dilution techniques according to our laboratory) in male neonate and 1:1280 in female neonate. Anti-SSA/Ro and anti-SSB/La antibodies were also positive in twins. Electrocardiogram of the baby revealed a complete congenital heart block (Fig. 1 and Fig. 2). The echocardiography showed a structurally normal heart without endocardial fibroelastosis. The diagnosis of neonatal lupus erythematosus with congenital heart block was established for twins. They received single-chamber pacemaker implants at day 12 of life. The evolution was immediately favorable with a heart rate around 110 beats per minute. Autoantibodies disappeared in twins by the seventh month of life.

The follow-up was 2 years. The twins are asymptomatic and pacemakers are functional. The regular clinical and biological controls don't reveal any cutaneous lesions, liver involvement or hematological disorders.

DISCUSSION

Neonatal lupus erythematosus is a rare disease described mainly in isolated case reports. The prevalence of congenital heart block in newborns of anti-SSA/Ro positive mother is 2% [2]. Twin cases of neonatal lupus erythematosus are rarely reported principally in dizygotic twin [4] like in our cases.

Neonatal lupus erythematosus is an auto-immune

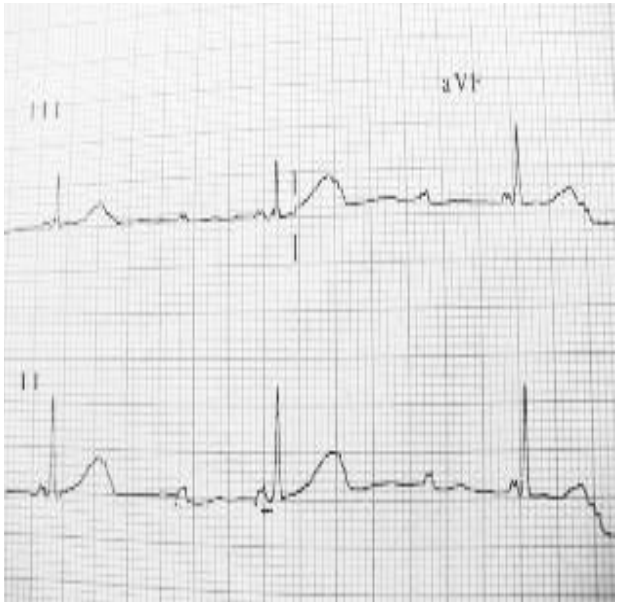

Figure 1: A boy electrocardiogram shows complete atrio-ventricular block

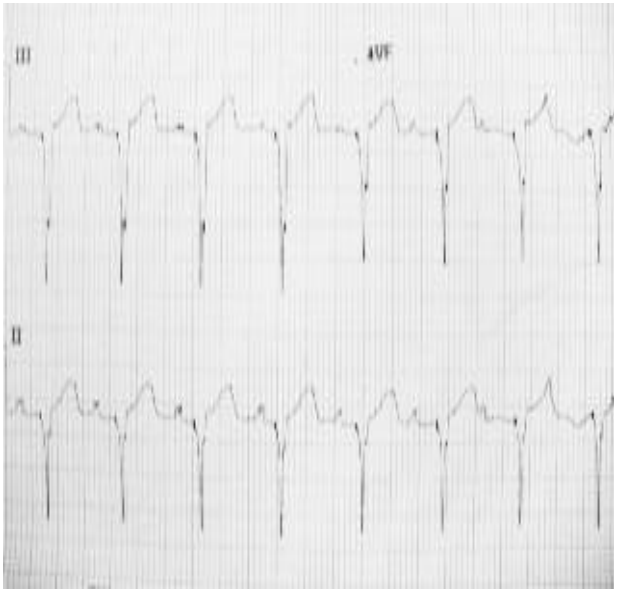

Figure 2 : An electrocardiogram after pacemaker implantation

mediated disease caused by transplacental passage of maternal antibodies essentially anti-SSA/Ro and anti-SSB/La and, less frequently, anti-U1 ribonucleoproteins (RNP) [1,6]. Mothers may have systemic lupus erythematosus syndrome or another connective tissue disease or may be completely healthy at birth giving time [2,3,4]. According to studies, 22 % [3] to 54 % [4] of mothers are asymptomatic at the time of diagnosis. The discovery of connective tissue disease is made fortuitously in the mother through the fetal cardiac complication [4,7]. Transplacental passage of maternal anti SSA/Ro and/or SSB/La immunoglobulin is thought to be rivotal in inducing tissue damage. However, autoantibodies are necessary but insufficient to cause congenital heart block and environnement or fetal factors are contributory [1,6].

The clinical findings of neonatal lupus erythematosus deficiency are very heterogeneous. The main manifestations are congenital heart block (15-64%) [3-5,8], cutaneous lesions (21-84%) [3-5,8], liver involvement (8-24%) [4,5] and hematological problems (8-15%) [4,5]. Congenital heart block is the most common cardiovascular abnormality of neonatal lupus erythematosus [7]. It develops in the second trimester of pregnancy and is often permanent [8]. It is revealed by fetal bradycardia during pregnancy and is detected by fetal echocardiography since the 16th week of gestation [2]. The risk of recurrence of congenital heart block ranges from 16 to 25% in the following pregnancies [1,8,10].

Congenital heart block may be associated with endocardial fibroelastosis. Other cardiovascular manifestations of neonatal lupus erythematosus are rare and include atrial and ventricular arrhythmias, other conduction abnormalities, myocarditis, cardiomyopathy and structural heart disease, particularly valvar lesions [9]. Additional transient electrocardiographic abnormalities (sinus bradycardia, QT interval prolongation) have been reported [5,7]. Women who have already had a child with neonatal lupus erythematosus should receive dexamethasone and intravenous immunoglobulin for prevention of recurrent complete congenital heart block from the time of conception with continuation through at least 34 weeks of gestation [10,11]. However, the efficiency of prophylactic treatment of congenital heart block is not established [10,11].

The diagnosis of neonatal lupus erythematosus is based on the clinical features and the positivity of neonatal lupus erythematosus associated autoantibodies in the mother's or neonate's serum [1,2]. It is recommended to carry out liver function tests and a complete blood cells count. Cardiac examination is systematic [5]. In our cases report, the clinical features consist of congenital heart block in twins. The diagnosis is made by identifying isolated congenital heart block in addition to positivity for antinuclear antibodies, anti-SSA/Ro and anti-SSB/La in the mother's or twins'serum.

Treatment of neonatal lupus erythematosus depends on clinical features. Patients with heart involvement related to lupus need regular monitoring to assess cardiac function [9,12]. Neonates with congenital heart block who are unable to compensate for a slow heart rate require a pacemaker in 63 to 68 % [2,10]. If there is cardiac failure, systemic corticosteroids are indicated in combination with standard medical management [1]. In our cases, there aren't any signs of heart failure and the treatment consists of pacemakers'implantation.

The efficiency of prophylactic treatment of complete congenital heart block is not established [9,11]. Recently, intravenous immunoglobulin is being evaluated for the prophylactic treatment in mothers who have had a previous child with congenital heart block and appears to be an effective option for preventing the passively acquired autoimmune aspect of congenital heart block [11]. Twins mother don't receive any antenatal treatment.

Neonatal lupus erythematosus prognosis is defined by the cardiac involvement. Congenital heart block is associated with a 20 to 30% of mortality rate in the neonatal period [2,6]. Generally, the prognosis following pacemaker implantation in children with congenital heart block is good [9]. Our cases clearly illustrate this positive trend.

The long-term prognosis is dominated by increased risk of developing other auto-immune diseases in late childhood or adulthood [1,3]. Long term and close follow-up is necessary [1,3,9].

CONCLUSION

The main morbidity and mortality of neonatal lupus erythematosus is from complete congenital heart block. All clinicians should suspect neonatal lupus erythematosus in babies with atypical skin lesions, cardiovascular manifestations, thrombocytopenia or anemia and serum auto-antibodies should be investigated to rule out neonatal lupus erythematosus. Further prospective studies are necessary to develop prophylactic treatment strategies for mothers with a prior affected child.

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