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Case Report

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Congenital Nephrotic Syndrome due to Congenital Syphilis: A Case Report

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ABSTRACT

A 2 month-old baby was admitted to our emergency unit presenting hypoactivity, hyporexia, hepatosplenomegaly, hyperlipidemia, oliguria and generalized edema, compatible with congenital nephrotic syndrome. Additional investigation evidenced a reactive non treponemal test and her mother was untreated for gestational syphilis. No specific measure for nephrotic syndrome was taken, intravenous penicillin G was administered for 10 days with total remission of symptoms. Follow up after discharge confirmed that congenital syphilis was the cause of congenital nephrotic syndrome. Since syphilis case reports have been increasing worldwide, physicians should be aware of its uncommon manifestations.

Keywords: congenital nephrotic syndrome, congenital syphilis, nephrotic syndrome - early onset

INTRODUCTION

The prevalence of Congenital Syphilis (CS) has been increased worldwide in the last decade and became a public health concern [1]. World Health Organization (WHO) estimates that one million of pregnant women are infected annually, and Brazil is the second country in America in number of cases [2]. In 2018, there were 26,129 cases of congenital syphilis reported in Brazil, which was 5.2% higher than the previous year [1].

Vertical transmission of syphilis can occur throughout pregnancy, and perinatal transmission is also possible, but early diagnosis and treatment eradicates disease in about 97% of cases [3].

Early manifestations of CS include hepatosplenomegaly, osteochondritis, pneumonitis, thrombocytopenia, intrauterine growth restriction, meningitis, cranial nerve palsies, hemorrhagic rhinitis, mucocutaneous lesions, skin desquamation or bullous lesions involving palms and soles [4]. Other manifestations like eye, kidney or heart involvement are rare, although they have been described elsewhere [4,5].

Congenital nephrotic syndrome (CNS) is also a rare condition, defined as proteinuria, hypoalbuminemia, hyperlipidemia and edema in the first 3 months of life [5]. Genetic defects are the major cause of CNS, however it might be also a part of a syndrome, or caused by maternal disease, congenital infection or alloimmunization [5,6].

There are few reports documenting the association between infection and nephrotic syndrome [7-9]. Here we report a rare condition of a 2 month- old baby with CNS caused by CS.

CASE REPORT

A 68-day old female baby was referred to pediatric emergency care presenting with vomiting, lower limb edema, abdominal distension, oliguria and poor feeding. On further history, her mother was diagnosed with gestational syphilis, but she refused treatment. Physical examination revealed hepatosplenomegaly (4.5cm and 2cm), generalized edema, erythematous skin lesions and desquamation involving palms and soles.

Laboratory findings (**Table 1**) included anemia, thrombocytopenia, low serum albumin, proteinuria, hematuria, hyperlipidemia, C-reactive protein elevated, normal creatinine and urea. Infectious screenings (Hepatitis B and C, Toxoplasmosis, Rubella, Human Immunodeficiency Virus and Cytomegalovirus) were negative, except of Veneral Disease Research Laboratory test (VDRL) which was positive in both peripheral blood (at dilution 1:128) and cerebrospinal fluid (dilution 1:2). Long bone X- rays were normal.

The patient was treated with intravenous penicillin G for 10 days with clinical and laboratory improvement (**Table 1**). No specific measure for CNS treatment was taken and unrinalysis parameters normalized (**Table 2**). Follow- up after discharge confirmed CS with regression of non- treponemal titer (VDRL= 1:2) and treponemal test positive after one year of age (FTA-ABS IgG positive).

DISCUSSION

CS is a preventable disease, once the treatment of gestational syphilis can cure both mother and fetus. About two

Table 1. Laboratory Tests Results before treatment (BT) and after treatment (AT) for Congenital Syphilis

Laboratory results	BT	AT
Hemoglobin(g/dL)	7.0	9.6
Hematocrit(%)	19.8	29.7
Leukocytes(cels/mm^3)	15,950	11,800
Platelets(cels/mm^3)	101,000	386,000
Urea (mg/dL)	23.9	7.3
Creatinine(mg/dL)	0.42	0.08
Albumin(g/dL)	2.24	3.39
Total Colestherol (mg/dL)	284.4	109
Triglycerides(mg/dL)	319	63
C-reactive protein(mg/dL)	20.3	0.5

BT: before treatment; AT: after treatment

Table 2. Urinalysis parameters before treatment (BT) and after treatment (AT) for Congenital Syphilis

Urinalysis	BT	AT
Ph	6.0	5.5
Density	1,015	1,015
Proteins	+++	negative
Hemoglobin	+++	negative
Red Cells	650,000/mL	negative
Leukocytes	75,000/mL	negative
24 hours Proteinuria	1,834.70 mg/dL	Not performed

BT: before treatment; AT: after treatment

thirds of untreated women transmit the disease to their child, who become symptomatic at the first 3 months of life [2,4,10].

Early signs of CS are result of circulation of the *Treponema pallidum* through organs and tissues, triggering immune response, which causes vasculitis, necrosis and fibrosis. Immunocomplex deposition in the region of the glomerular basement membrane is related to renal disease, but the exact pathogenesis remains unknown [11-13]. Since the signs of CNS appear 6-8 weeks after birth, it seems that the immune response is most related to CNS than treponemal activity itself [14]. Renal involvement presents from mild albuminuria to severe disease, but the regression is fast after specific treatment, so CNS could be a transitory immunopathy in most cases [14].

Unfortunately, no biopsy was performed in this infant, but since *Treponema pallidum* circulates in all body, its presence in kidney cells does not confirm the correlation between CNS and CS [11,12]. The diagnosis of renal disease due to CS requires the evidence of clinical manifestations of CS in infant and/or positive serologic tests in the first weeks of life, evidence of maternal syphilis, signs of nephrotic syndrome and the absence of other causes and fast remission of symptoms after penicillin treatment [13,15]. This patient fullfills all these criteria.

Congenital infections are the second cause of CNS, but it should always be investigated as a cause first, because the treatment goal in these cases is to eradicate the pathogen, which *per si* is effective to reverse initial renal abnormalities [13,14]. The treatment with penicillin G was enough to reverse the CNS in this infant, no other measure was necessary (restriction diet, steroids), which was an indicator that CS was implicated to CNS [11,12,16,17].

CNS is a rare condition, and its association with CS is even lower [12,15]. Since the incidence of CS has been increasing, physicians should be attentive to this uncommon manifestation in order to provide early diagnosis and the correct treatment.

CONCLUSION

Congenital nephrotic syndrome is an uncommon complication of congenital syphilis. This case illustrates this association, and it should be an alert to health care providers be attentive to unusual manifestations of congenital syphilis.

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