

Osteopetrosis Presenting with Neonatal Thrombocytopenia: A Case Report

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ABSTRACT

Background: Osteopetrosis is an inherited and rare bone disease, characterized by the impairment of bone modeling and remodeling and the failure of osteoclasts to resorb bone. It also results in skeletal fragility despite increased bone mass, and may cause hematopoietic insufficiency, disturbed tooth eruption, nerve entrapment syndromes, and growth impairment. The infantile form of the disease is the most severe one with a poor prognosis. If untreated, it will result in death by the first decade of life.

Case report: A term 10-day-old female neonate with a birth weight of 2850 grams delivered by caesarian section was reported without a history of parents' consanguinity from a healthy, gravida 2, para 1, abort 1 mother with no complication during pregnancy. The newborn admitted to the neonatal ward due to diffuse petechiae, purpura on the skin, and periorbital ecchymosis (raccoon eyes), without any other abnormal significant signs and symptoms. In laboratory findings except for frequent low platelet count as low as 10000-25000, there wasn't any other abnormalities. Other coagulative tests were within normal ranges. In addition to antibiotics for probable sepsis, platelet transfusion was considered as the treatment, and due to the lack of proper response to the treatment, with suspicious of alloimmune thrombocytopenia, two courses of IV IgG were administered. Eventually, the persistent thrombocytopenia in spite of mentioned treatment led to further investigation, and finally osteopetrosis was diagnosed by the result of brain CTS. The patient was discharged from the hospital with a moderate thrombocytopenia while she needed frequent platelet transfusion. Eventually with bone marrow transplantation, the sign and symptoms of the disease subsided.

Conclusion: In persistent and unjustifiable neonatal thrombocytopenia, diagnosis of osteopetrosis should be considered.

Keywords: Neonates, Osteopetrosis, Thrombocytopenia

Introduction

Thrombocytopenia (platelet count < 150000/ μ L) is one of the most common hematologic disorders in neonatal periods. It is seen in < 1% of all neonates and it is more common in ill neonates (1). Many maternal or neonatal disorders can cause low platelet count in the first days of life with a short or prolonged period of involvement (2).

One of the rare diseases accompanied with thrombocytopenia is osteopetrosis that is an inherited and a rare bone disease with overall incidence of 1 case per 100,000-500,000 population. It is characterized by the failure of

osteoclasts to resorb bone as well as the impairment of bone modeling and remodeling resulting in skeletal fragility despite increased bone mass.

Moreover, it may also cause hematopoietic insufficiency, disturbed tooth eruption, nerve entrapment syndromes, pancytopenia, hepatosplenomegaly, and growth, visual and hearing impairment (3). There are 3 distinct clinical forms of the disease, including infantile, intermediate, and adult onset. Infantile form is autosomal recessive and the most severe form of the disease

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with a poor prognosis. If untreated, it will result in death by the first decade of life due to severe anemia, bleeding, or infections (4). Bone marrow transplantation can markedly change the prognosis of the disease (5, 6).

In this case report, we present a case of osteopetrosis with the first presentation of thrombocytopenia in the neonatal periods.

Case report

A 10-day-old female neonate delivered by caesarian section was reported in the study with no parents' consanguinity from a gravida 2, para 1, and abort 1 mother without previous history of thrombocytopenia and autoimmune disease, in 39 weeks of gestation and birth weight of 2850 grams. The mother had a normal pregnancy without any reported complications.

The newborn admitted to the neonatal ward of maternity hospital shortly after birth because of diffuse petechiae and purpura on the skin, and

periorbital ecchymosis (raccoon eyes), without any other abnormal significant signs and symptoms. In laboratory findings except for frequent low platelet count as low as 10000-25000, there wasn't any other abnormalities.

Other coagulation tests were within normal ranges. Due to persistent thrombocytopenia, the patient was referred to Mofid children's hospital. In addition to antibiotics for probable sepsis, platelet transfusion was considered as the treatment, and due to the lack of proper response to treatment, with the suspicious of alloimmune thrombocytopenia, two courses of IV IgG were administered.

This persistent thrombocytopenia in spite of mentioned treatment led to further investigation and finally, osteopetrosis was diagnosed by observing skull and maxillofacial bone sclerosing and increased density in favor of osteosclerosis in the brain CTS. Figures 1-4 illustrated the skull X-ray and brain CTS of the patient.



(1)



(2)



(3)



(4)

Figure 1-4. Skull X-ray and brain CTS of the patient

Eventually the patient discharged from the neonatal ward of the hospital with a relatively good condition and a moderate thrombocytopenia (platelet count of 74000), however, she needed frequent platelet transfusion in early infancy. Subsequently, the symptoms of the disease subsided after bone marrow transplantation in the age of 6 months. In follow up of the patient at the age of 20 months, fortunately, no visual and hearing problems or any other complications of disease were observed.

Discussion

In this case presentation, we reported a term neonate with persistent thrombocytopenia not responding to usual treatment such as the antibiotic for treatment of sepsis, platelet transfusion and IV IgG for treatment of alloimmune thrombocytopenia.

Treatment failure led to more evaluations, such as brain CTS for the assessment of brain hemorrhage and ultimately the final diagnosis was given. Alloimmune thrombocytopenia is the leading cause of intrauterine and neonatal severe thrombocytopenia without any available specific and diagnostic laboratory test in Iran. In most cases, the initial diagnosis and treatment are started on the basis of the platelet count in CBC and other clinical findings (7).

In most cases of neonatal alloimmune thrombocytopenia, platelet count is increased by the disappearance of maternal antibodies in neonatal circulation within 3-4 months. However, currently recommended treatments (compatible platelet transfusion, IV IgG, and corticosteroid) have led to a rapid rising of the platelet count, and the prevention of the disease complications (8). In this study, the persistent thrombocytopenia despite appropriate treatment in the patient was the cause of further investigation.

Osteopetrosis is a rare metabolic and hereditary bone disorder with generalized skeletal sclerosis. The most severe form of the disease is infantile autosomal recessive osteopetrosis that is one of the three subtypes of the disease.

Timely and early diagnosis of infantile osteopetrosis is important for genetic counseling and the management of disease and its complications. Diagnosis is largely based on the clinical and radiographic evaluation, confirmed by gene testing where applicable (9).

All the case reports of disease in neonatal periods are the severe infantile form of disease. However, there are some case reports of patients

with the initial diagnosis of osteopetrosis in the age of adolescence, such as a 14-year-old boy with dental problem diagnosed with sclerosis in mandibular and maxillary bones by panoramic radiography (10).

In another case presentation of Iranian patients, two siblings of a family with a history of consanguinity in parents, presented with seizure in the age of 15 days of their life. Neurologic symptoms were the predominant manifestation of the disease which led to the death of patients (11). The patient in this study didn't have any neurologic symptoms.

As it is mentioned above, osteopetrosis is a rare disease with nonspecific symptoms reported in some cases. Although blood calcium level was normal in our cases, neonatal hypocalcemia can be a sign of disease (12, 13); furthermore, it is important to consider the index of suspicion in usual neonatal complications as it is necessary for the early diagnosis of this rare disorder.

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Conflicts of interests

None declared.

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