Foot Involvement - A Presenting Feature for Gaucher Disease, A Case Report

Ehsan Shahverdi 1,2, Maryam Allahverdi Khani 3,*, Mozhdeh Beiraghdar 4, Mohammad Ali Ehsani 5, Mohammad Shahriyar 6, Elena Karimvand 7

1 Students’ Research Committee, Baqiyatallah University of Medical Sciences, Tehran, Iran
2 Blood Transfusion Research Center/High Institute for Research Center & Education in Transfusion Medicine, Immunohematology Department, Tehran, Iran
3 Department of Medicine, Najafabad Branch, Islamic Azad University, Najafabad, Iran
4 Department of Pathology, Najafabad Branch, Islamic Azad University, Najafabad, Iran
5 Department of Pediatrics, Tehran University of Medical Sciences, Tehran, Iran
6 Department of Genetics, Islamic Azad University Tehran Medical Science, Tehran, Iran
7 Faculty of Agriculture, Islamic Azad University of Varamin, Tehran, Iran

* Corresponding author: Islamic Azad University of Medical Sciences, Pouryaye Vali Blvd, Najafabad, Isfahan, Iran. Tel/Fax: +98-3142291111, E-mail: allahverdy.maryam@yahoo.com

Abstract

Introduction: Gaucher disease is one of recessive autosomal diseases, wide range of childhood diseases to the absence of symptoms throughout its life. That three types of is more common than other types, that comprises a wide range of clinical findings in childhood and may be seen in different parts of the body but Long bone involvement is common in Gaucher disease.

Case Presentation: In this paper, 11-month-old baby girl suddenly lost the ability to walk and her loss of appetite, night sweats, severe irritability and weight reduction, Her parents were healthy and there was not a history of any special disease in both families and She hasn’t had a history of previous hospitalization, so using different tests and biopsies the Gaucher disease was diagnosed.

Conclusions: Careful consideration of signs and symptoms and medical history, with a thorough review of systems, is important when evaluating patients with lysosomal storage disorders. Signs such as splenomegaly, anemia, thrombocytopenia and developmental delay can be signs of Gaucher disease, so the presence of these signs should be investigated.

© 2016. Focus on Sciences

INTRODUCTION

Gaucher disease (GD) is one of systemic and recessive autosomal diseases, which is associated with a lysosomal storage disorder that occurs by a defect in producing lysosomal glucocerebrosidase due to GBA gene mutation on the first chromosome (1q22) [1, 2]. This disease is panic and is seen with higher prevalence in Ashkenazi Jewish population [2]. Defect in Glucocerebrosidase enzyme causes its accumulation in the reticuloendothelial system and thus the incidence of a wide range of clinical demonstrations including [2]: hepatosplenomegaly, anemia, thrombocytopenia, bone marrow suppression and skin pigmentation [1, 3]. In 90% of patients with Gaucher, bone involvement, particularly long bones, is seen, which causes pain and mobility restrictions of the patient [4]. Gaucher disease is divided into three groups, in terms of clinical phenotype: type one is the chronic form and without involvement of the nervous system, which forms 95% of total cases [1]. Patients with this type disease, suffer hepatosplenomegaly, thrombocytopenia, bleeding in the joints, anemia, pulmonary and skeletal abnormalities, growth restriction and reduced quality of life [1]. Types two and three are associated with involvement of the nervous system, which type two has an intense progress that begins before 2 years old [1] and is accompanied by neurological, kidney, spleen and lung diseases, and because of pulmonary insufficiency, their death occurs between 2-4 years old [1], and in fact it is the worst form of this disease. Patients with type 3 may have a spread before 2 years old, but often its progress is not severe, and they may be alive till third and fourth decades of their life [1]. In addition to the above cases, fatal perinatal and cardiovascular diseases have also seen in some of the cases of GD [1]. GD is recognizable according to radiographic features, but if necessary, by biopsy one can detect it certainly [2]. Ethical consideration:
this study was approved by the ethics committee of Tehran University of medical sciences patient was asked to sign an informed consent form for publication. All the terms of the Helsinki declaration were considered and the personal information remained anonymous.

CASE PRESENTATION

An 11-month-old baby girl is visited with compliance of prolonged fever accompany with diarrhea, but she doesn’t have bile or blood vomiting. Her mother points to her loss of appetite, night sweats, severe irritability, and 15 percent weight reduction during past two months, which after occurrence of these conditions, the child no more can stand on her own legs. Her birth weight was 3750 g and her vaccination record is complete. Her parents are not relatives and there is not a history of any special disease in both families. She hasn’t had a history of previous hospitalization, but according to the mentioned problems, has received several times outpatient treatment, which in this period, she has had a history of using erythromycin, ibuprofen, azithromycin and Cefixime drugs. In physical examinations, hepatosplenomegaly and enlarged lymph nodes were observed. Her skin is pale and her vital signs were pulse 102 beats per minute, temperature 39.5°C, Respiratory rate 30 breaths per minute. A laboratory test is revealed WBC: 4000/mm3, 52% lymphocytes, Hb: 8.8g/dl, Platelets: 13000/mm3, MCV: 75fl, LDH: 995U/L, ECR: 140 mm/hour, CPR: 2+. Blood culture and urine and feces were negative and another factor was Normal. In Peripheral blood smear was seen anisocytosis, poikilocytosis and anisocytosis. Ultrasonography of the abdomen and pelvis doesn’t show enlarged lymph Para-aortic. Abdominal pelvic CT scan with contrast IV was periosteal reaction in all bones without any tumoral zones. A bone marrow biopsy was done. Bone marrow biopsy showed mild excess in erythroid and megaloblast cells and has pseudo-Gaucher cells. During hospitalization, the patient had a 2 cm mass in her left cheek that radioisotope bone scan was conducted on her; she had an increased uptake in central bones of right hip and left proximal femur and thoracic. For neuroblastoma, Vanillylmandelic acid (VMA) and Homovanillic acid (HVA) checks of urine were done that were normal. Another time a bone marrow biopsy was done on the patient that were in favor of small round cell tumors (Fig 1 and Fig 2).

During checks, the child had a mass in her leg that biopsy of bone mass was done, which its pathologic results indicate normal bone marrow, proliferation and fibromatosis were with different cellular levels, such that some hyper cellular with coarse core in areas with neoplasia was extremely low, and uniform and spindle cells indicating neoplasia and lack of mitosis were observed. In flow cytometry of bone marrow, signs of types of AML were not observed. According to observing a turn pseudo-Gaucher cells in the sample of bone marrow, metabolic examinations were done on the patient that evidence of GD was observed in her blood sample analysis.

DISCUSSION

Gaucher disease is one of lysosomal storage diseases, which is considered as rare and genetic diseases. The glucocerebroside laden enlarged RE cells with eccentrically placed nucleus are called Gaucher’s cells its accumulation in many organs causes organomegaly with dysfunction and also replacing bone marrow by cytopenias [5, 6]. The relative shortage of beta-glucosidase enzyme acid (glucocerebrosidase) results in type I of this disease with no clinical demonstrations of the nervous system and severe defect of the enzyme causes serious forms of the disease, i.e. types II and III that is followed by involvement of nervous system. Several studies have reported
more than 200 gene mutation generator of beta-glucosidase enzyme acid [7]. Deposition of Gaucher cells results in fibrosis and pressure on vessels, and finally will cause dilation and increasing pressure on the portal vein in a patient [8]. Gaucher disease is usually associated with demonstration of pseudo-Gaucher cells in bone marrow [1]. The activity of Glucocerebrosidase enzyme is the best criteria for detecting GD in all its types [7]. Several authors emphasize this point that there is no relationship between the remaining activity of acid beta-glucosidase enzyme and clinical intensity and severity or type of GD [9]. Its treatment includes replacing Glucocerebrosidase enzyme, which partially can help patients' recovery. Bone marrow transplant, in some cases of these patients can be effective, too [5]. The definitive diagnosis was established by determining leukocyte or cultured fibroblast [10], b-glucosidase activity or by demonstrating mutations in the patients DNA [5]. Prenatal diagnosis was done by examining cultured amniocentesis for this b-glucosidase activity or amniocentesis or chorionic villus DNA for mutations.

In pathology slides of our case, Cytoplasm seems wrinkled, bulbous shape, striated, and like clumped paper and presence of Gaucher attributed cells supported our detection [5]. Also, after confirming our diagnosis, the patient was treated with enzyme replacement, and other protective actions, including blood transfusion, and antibiotic therapy were done for her, and overall health of her improved and returned to a suitable growth and weight.

Signs such as splenomegaly, anemia, thrombocytopenia and developmental delay can be signs of GD, so presence of these signs should be investigated. Considering that Gaucher doesn’t have definitive treatment, necessity of supportive treatments requires continuation of treatment.

CONFLICTS OF INTEREST
There is no conflict of interest for the present study.

REFERENCES