Case Study

GAUCHERS DISEASE: A RARE CASE REPORT

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ABSTRACT

Gaucher’s disease is the most common group of lysosomal storage disorders caused by defective activity of an enzyme β-glucosidase leading to accumulation of glucocerebroside in cells of macrophage lineage. Accumulation of glucosylceramide in tissues leads to multisystem organ involvement. The “Gaucher cells” can be found in the spleen, liver, bone, and central nervous system in affected individuals, causing hepatosplenomegaly, anemia, thrombocytopenia and skeletal diseases. Serum β-glucosidase levels <15% of mean normal activity confirms the diagnosis, enzyme replacement being the only definitive treatment. We hereby report a case of Gaucher disease type 1 or non-neuronal form presented with pulmonary involvement. Despite its rarity in incidence, we presented this case to emphasize the importance of clinical examination and bone marrow finding in the diagnosis of G.D. Early diagnosis is important, because the disease is rare and diagnosis may be delayed.

KEY WORDS: β-glucosidase; Gaucher’s disease; Multisystem organ involvement

INTRODUCTION

Gaucher disease (GD) is a lipid storage disease characterized by deposition of glucocerebroside in cells of the macrophage-monocyte system. It was first described by Gaucher in 1882, and the storage of glucocerebroside was first recognized by Epstein in 1924. The metabolic defect, which is the deficiency of the lysosomal hydrolase β-glucosidase, or β-glucocerebrosidase, was identified by Brady et al.[1] There are three clinical subtypes, which are delineated by the absence or presence and progression of neurologic involvement: type 1 or the non-neuronal form; type 2, the infantile-onset, acute neuronal form; and type 3, the juvenile-onset neuronal form.[2] All three subtypes are inherited as autosomal recessive traits. Type 1 disease is the most common lysosomal storage disease.

CASE REPORT

A 15 year-old boy presented with fever, cough, hurried breathing and blood stained sputum, weakness, pallor and gradually increasing abdominal girth weight loss and anorexia. He was third child born to parents with third degree consanguineous marriage with previous two siblings died of reasons which couldn’t be traced. There was no history of easy bruising or prolonged bleeding on trauma, hematemesis, night sweat, bone pains.

On physical examination, pallor with toxic look was noted; however there was no icterus or lymphadenopathy. He had firm, non-tender massive splenomegaly and a non-tender, mild hepatomegaly. There were no signs of ocular motor problems or other neurological abnormalities. Rest of systemic examination was essentially normal.
Lab investigations revealed cytopenia in two cell lines (hemoglobin=10.6g/dl, white blood cells=10400/mm3 and platelets=34000/mm3). Liver enzymes (aspartate aminotransferase= 41 IU/ml, alanine aminotransferase=28 IU/ml), serum proteins and albumin, kidney function test and urine analysis were unremarkable. PT (prothrombin time) was 16s [INR=1.2] and PTT (partial thromboplastin time) was 45s. Mantoux (tuberculin sensitivity test or PPD test) viral markers, HBsAg and HIV antibody test were negative. Blood and urine cultures were negative.

X-ray chest showed consolidation right midzone. X-ray of the pelvis with lower limbs was found to be normal. Fundoscopy examination was normal. Ultrasound revealed multiple military nodules of spleen and liver with massive splenomegaly with span of 21cm. Liver span was 98mm with normal echotexture. NCCT showed large area of consolidation involving right middle lobe. Patchy areas of consolidation in anterior basal and posterior basal segments of right lower lobe and anterior segment of left upper lobe. To evaluate massive splenomegaly, bone marrow aspiration was performed which revealed leucoerythroblastic reaction and presence of few atypical plasma cells (Figure 2) suspicious of storage disorder. Final diagnosis of type 1 Gauchers disease was made.

DISCUSSION

Gaucher's disease is an autosomal recessive disorder. Its overall incidence is approximately 1:40,000 individuals.[3] It affects all racial and ethnic groups but prevalence is higher among Ashkenazi Jews. It is the most common lysosomal storage disorder.[4] Although Gaucher's disease is well known in adult patients but about two-thirds of the patients present before the age of 20 and onset in childhood is predictive of severe and progressive phenotype.

The most common signs and symptoms noted in GD are splenomegaly (95%), hepatomegaly (87%), radiological bone disease (81 %), thrombocytopenia (50%), anemia (40%), growth retardation (34%), bone pain (27%), and bone crisis (9%). A skeletal manifestation is found more often in older children.[5] In this case the differential diagnosis process began by considering the broad categories of disease that presented with hepatosplenomegaly: anatomical abnormalities, congestion, infection, hematologic disorders, and infiltrative processes.

Although hematologic disorders could explain the organomegaly, several of these (including chronic hemolytic anemia, disorders associated with extramedullary hematopoiesis, myeloproliferative disorders, and sickle-cell disease) were ruled out because of the absence of other key signs such as jaundice, abnormal hemoglobin electrophoresis, painful crisis and leukocytosis. Within the remaining category of infiltrative processes, we considered two areas: malignant neoplasms and histiocytic disorders. Among the former, several childhood cancers could explain hepatosplenomegaly including leukemia, lymphoma and primary splenic tumors. However, most of these cancers present acute,
In addition, the patient lacked other characteristic symptoms of such cancers, including appearance of illness, fever, chills and weight loss. Other types of cancer were deemed unlikely for the patient's age. Finally some histiocytic disorders could explain the patient's symptoms, but these were ruled out as unlikely for the patient's age and because he lacked other associated symptoms, such as rapid clinical deterioration, fever, wasting, skin rash and irritability. Among other histiocytic disorders, several metabolic storage disorders commonly present with hepatosplenomegaly. Gaucher disease was unique in its consistent with our patient's symptoms. Bone marrow examination is the hallmark for the diagnosis of G.D however, all suspects should be confirmed by demonstrating deficient acid β-glucosidase activity in isolated leukocytes.[6]

CONCLUSION

GD should be considered in the differential diagnosis of patients with unexplained splenomegaly especially with an extended period of time. This case is reported to emphasize the importance of clinical examination and bone marrow finding in the diagnosis of G.D. Early diagnosis is important, because the disease is rare and diagnosis may be delayed. Moreover, the early recognition of GD would lead to safe and effective treatment with enzyme replacement which can decrease morbidity and reduce as far as possible the visceral and skeletal involvement.

REFERENCES