GAUCHER connection | A Lifeline for Patients Living with Gaucher Disease

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Welcome to Gaucher Connection eNews

Hello !

In this issue we hear from Dr. Neal Weinreb, a Hematologist/Oncologist in Coral Springs, Florida and Chair of the North American Scientific Advisory Board of the International Cooperative Gaucher Group. He outlines some of the most common manifestations of Gaucher disease.

Manifestations of Gaucher Disease

Type 1 Gaucher disease is an inherited disorder caused by a mutation in a gene called GBA, which directs the body to make an essential chemical called glucocerebrosidase.[1] This mutation causes the body to produce defective glucocerebrosidase, an enzyme that catalyzes a chemical reaction by which glucose, a simple and very important sugar molecule, is split off from glucocerebroside, a complex fat-sugar molecule that is one of the building blocks of cell membranes.[1,2]

Glucocerebrosidase deficiency causes progressive deposition of glucocerebroside within the cells of the body, especially within cells known as macrophages, which are found in large numbers in the spleen, liver and bone marrow.[2] For this reason, the most common manifestations of Gaucher disease occur in the blood, bone, spleen and liver.[1,2] However, the clinical manifestations of type 1 Gaucher disease can vary greatly from patient to patient, even differing between siblings.[2,3]

Hematological (Blood) Manifestations

The most common hematological manifestations are anemia and thrombocytopenia.[2]

Anemia means having too few of the red blood cells that carry oxygen from the lungs to all the tissues of the body.[4] The most common symptom of anemia is fatigue. As anemia worsens, patients may begin to complain of dizziness, limited exercise tolerance, shortness of breath or a rapid heart rate.[4]

Thrombocytopenia means having a low blood platelet count and can be associated with an increased risk of bleeding.[2,4] Signs of spontaneous bleeding include episodes of nose bleeding or gum bleeding, or a tendency to bruise easily.[2,4] Bleeding may sometimes be more serious, such as bleeding from the stomach or intestines, bleeding in the eye, or bleeding around or in the brain that can be life-threatening.[4]

The risks associated with a low platelet count are greater in patients who suffer physical trauma, who have to undergo surgery, or in those who have taken aspirin or related medications. Additionally, some patients with Gaucher disease may have a risk of bleeding that is disproportionate to the degree of decrease in the platelet count.[5] This is of particular concern during pregnancy when patients with Gaucher disease have significant risk for bleeding at or after delivery.

Involvement of the Spleen and Liver

Nearly all patients with type 1 Gaucher disease have enlargement of the spleen, known as splenomegaly.[2] In half of patients, the spleen volume is more than 15 times normal, resulting in abdominal protrusion, bloating, inability to eat a normal sized meal, weight loss, and sometimes episodes of severe pain.[6]

Aside from taking up a lot of space in the abdomen, a big spleen also traps a large volume of blood, giving it an extraordinary opportunity to feed its appetite for red blood cells, white blood cells and platelets. This is the major reason why patients with type 1 Gaucher disease frequently have low blood counts.[2]

Moreover, the increased volume of blood in the spleen can itself cause problems because most of that blood volume is discharged directly into the blood vessels that supply the liver. This extra blood can add to the enlargement of the liver that often occurs in patients with Gaucher disease due to the presence of Gaucher cells and, in a small minority of patients, can lead to serious complications, such as inflammation and scarring in the liver and portal hypertension, an increased pressure in the veins that bring blood to the liver from the stomach and intestines.[1,2]

Bone Manifestations

More than 80% of patients have some evidence of bone involvement that can cause serious, even life-altering, skeletal and joint conditions.[6] Issues related to Gaucher disease and bones include growth retardation in children, increased risk of fracture and bone pain and bone crises.[3]

Fracture risk in patients with Gaucher disease is most commonly due to a generalized "thinning" of the bones known in its milder form as osteopenia and in its severe form as osteoporosis. This type of bone loss is common in all aging people, but may have more serious consequences in Gaucher patients who have lower levels of bone mass to begin with. Doctors need to watch closely for evidence of low bone mineral density in all patients with Gaucher disease.[3]

More than 50% of patients with type 1 Gaucher disease have chronic bone pain, which may be difficult to reverse or control.[3] Patients may suffer also from bone crises, localized pain with acute onset sufficiently severe to require immobilization and strong painkillers.[3] Bone crises are often associated with another serious complication of Gaucher disease called osteonecrosis. Osteonecrosis is usually irreversible and can lead to bone deformities and joint destruction.[3] Patients with these complications can be helped with expert orthopedic management, including modern joint replacement techniques. Because osteonecrosis can sometimes occur in Gaucher disease patients without any acute symptoms such as a bone crisis, periodic serial skeletal evaluations using MRI are highly recommended.[3]

Find Out More

The key to the management of bone disease, and all other clinically significant complications of type 1 Gaucher disease, is vigilance and prevention. The best combination for success is to have serial comprehensive evaluations followed by prompt treatment when required.[1]

Learn more about Managing Gaucher at the Gaucher Connection website. Go >>

[1] Harmanci O, Bayraktar Y. Gaucher disease: new developments in treatment and etiology. World J Gastroenterol 2008; 14(25):3968-73.

[2] de Fost M et al. Gaucher disease: from fundamental research to effective therapeutic interventions. Neth J Med 2003; 61(1):3-8.

[3] Wenstrup R et al. Skeletal aspects of Gaucher disease: a review. Br J Radiol 2002; 75(Suppl 1):A2-12.

[4] Merck & Co., Inc. The Merck Manuals Online Medical Library. Available at: www.merckmanuals.com. Accessed: June 7, 2011.

[5] Spectre G et al. Platelet adhesion defect in type I Gaucher disease is associated with a risk of mucosal bleeding. Br J Haematol 2011; 153(3):372-8.

[6] Charrow J et al. The Gaucher registry: demographics and disease characteristics of 1698 patients with Gaucher disease. Arch Intern Med 2000; 160(18):2835-43.