

# Gaucher's Disease In A 72-Year-Old Man: Case Report And Review Of Literature

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## Abstract

This is A 72-year-old male was unexpectedly diagnosed with Gaucher's disease by bone marrow biopsy, which was later confirmed by measuring beta glucosidase enzyme in leukocytes and by electron microscopy. This patient had a translocation between chromosomes 5 and 14 along with an unusual manifestation of the disease. in addition, Gaucher's disease will be reviewed in geriatric papulation.

## INTRODUCTION

Gaucher's disease is an inherited, autosomal recessive storage disease of glucocerebroside due to a deficiency of glucocerebrosidase enzymes. Gaucher's disease has been divided into three classifications: Types 1, 2 and 3, based on the particular symptoms and course of the disease. <sup>1</sup> Type 1 is the most common and presents with pancytopenia, hepatosplenomegaly, and abnormalities is skeletal structure.

The symptoms can appear at any time from infancy to old age. While Gaucher's disease is predominately an illness that manifests in infancy, case reports are showing that more of the geriatric population is being diagnosed with Gaucher's disease. The Gaucher Registry, a database of over 3000 patients with the illness, shows that 7.7% of the patients are 65 and over. <sup>2</sup> De Fost et al. (2006) show that some patients did not get diagnosed until the age of 67. <sup>3</sup> Mankin et al. (2006) showed that some patients did not present with symptoms until age 74, while others went undiagnosed until age 82. <sup>4</sup> Elderly patients should not be overlooked for Gaucher's disease.

## CASE REPORT

This is a 72-year-old, who presented to the hematology clinic with weakness, fatigue and anxiety for the past few months. His past medical history is significant for hypertension, anxiety disorder and a history of a cerebrovascular accident. On physical exam, no gross hepatosplenomegaly was appreciated, but a CT of the abdomen showed mild splenomegaly. The patient's CBC

showed mild anemia of chronic disease with a hemoglobin of 11.9 g/dl and hematocrit of 34%; rbc, 3.76 million cells/ul; mcv, 90.3 fl; rdw, 15.6%; reticulocyte, 1.2%; wbc, 3.5 x 1000 cells/ul; and plt, 52 x 1000/ul. His ferritin was elevated (greater than 1900), iron was decreased, and total iron binding capacity was decreased. His urine hemosiderin was negative, HIV was negative, bone marrow culture was negative for bacterial growth in 72 hours, negative CMV, and no AFB growth in 8 weeks.

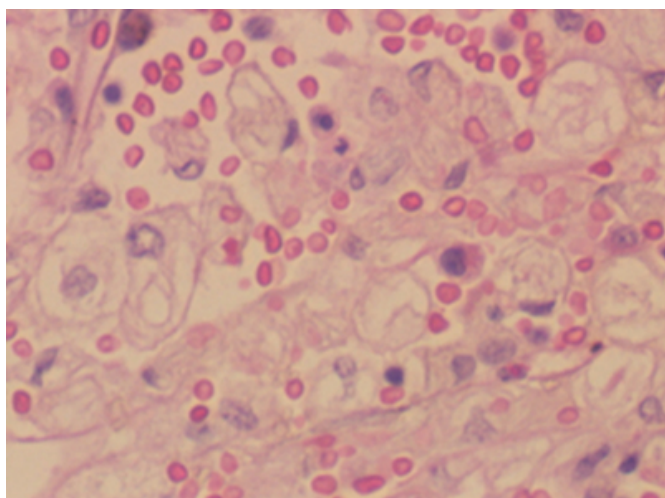
The patient underwent a bone marrow biopsy to rule out myelodysplastic syndrome (MDS) or hemochromatosis. On a peripheral blood smear, the RBC appeared normocytic, normochromic with polychromasia estimated at 2%. There were few tear drop cells and target cells. There was one nucleated red cell per 100 white blood cells seen. The white blood cell count was estimated at 3,000 and the number of platelets was also decreased.

The bone marrow aspirate showed a significant number of macrophages/histiocytes with a small and single nucleus in each cell; the cytoplasm was pale blue to gray and showed a striated pattern resembling wrinkled tissue paper, which is pathognomonic for Gaucher's disease cells (Figure 1). Bone marrow sections exhibited a nodular pattern of histiocytic infiltration with a low nuclear/cytoplasmic ratio. There was an abundant amount of cytoplasm in the cells, but they varied in color, ranging from blue to red. The basophilic cells were rather pale, yet striated, and had small, conspicuous nuclei. The acidophilic cells were also striated, and neither nuclear atypia nor necrosis was observed. Distinctly vacuolated and foamy macrophages were seen in

the sections as well. The M:E ratio was estimated to be 1:1. Erythropoiesis, myelopoiesis and megakaryocyte production was adequate. The patients iron stores were increased 2+, and his histiocytes were positive for PAS and TRAP stains and negative for AFP stains (Figures 2 and 3).<sup>5</sup> His leukocytes had a beta-glycosidase activity of 0.00 U (reference range is 0.08-0.38 U). The ultrastructural findings were typical of Gaucher cells. Chromosomal analysis of histiocytes from the bone marrow aspirate showed a translocation: 46, XY, t (5, 14) (p15.1; q24) (Figure 4).

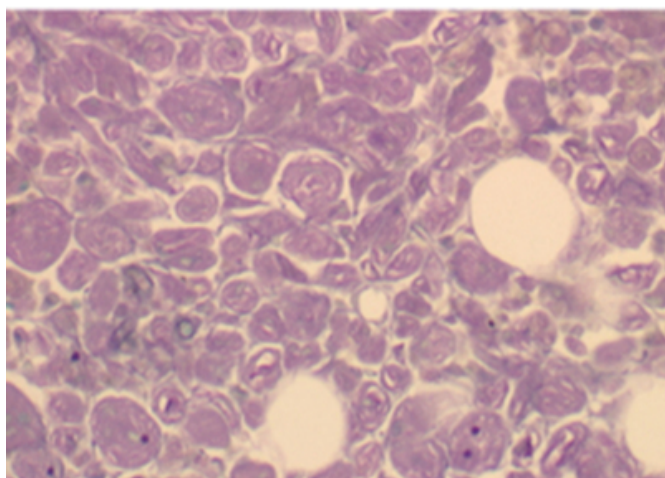
### Figure 1

Figure 1: Hematoxylin and Eosin stain of bone marrow aspirate showing the curtain like macrophages known as Gaucher's cells, X 100.



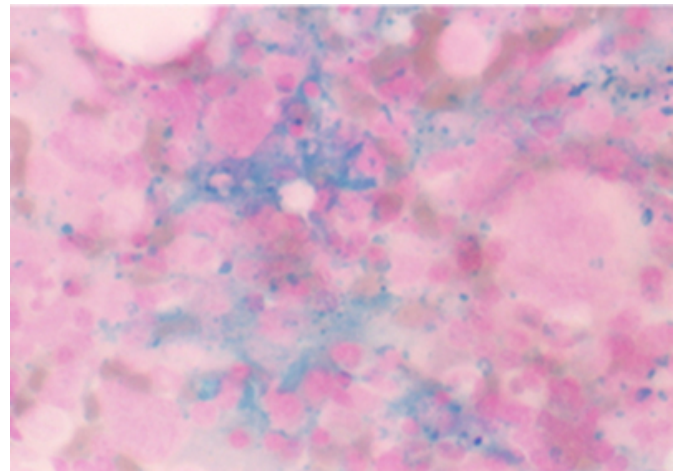
### Figure 2

Figure 2: PAS Positive Gaucher's cells in bone marrow biopsy, X 100.



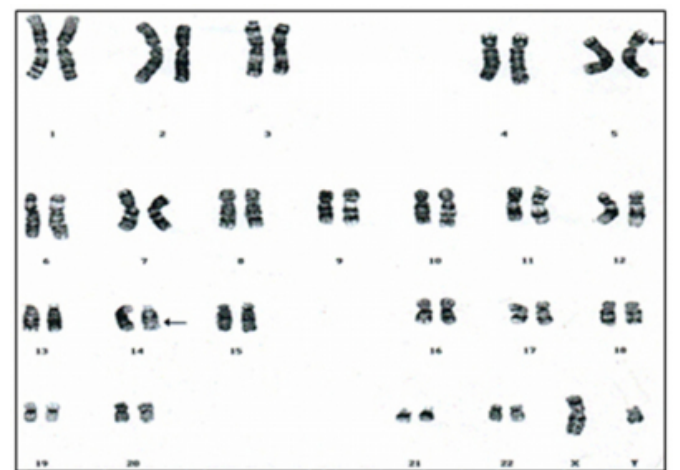
### Figure 3

Figure 3: Increased iron load (Prussian blue stain) in Gaucher's cells in bone marrow biopsy, X 40.



### Figure 4

Figure 4: Cytogenetic karyotype of this patient showing the translocation 46, XY, t (5; 14) (P15.1; q24)



## METHODS AND MATERIAL

0.4-micron sections were made from paraffin-embedded bone marrow biopsy specimens. Sections were stained with hematoxylin and eosin, tartrate-resistant acid phosphatase (TRAP), Periodic Acid Schiff (PAS) and iron stains. In addition, bone marrow aspirates were processed and stained at the same time. The specimens were then analyzed by a trained pathologist.

## DISCUSSION

While Gaucher's disease does lead to an accumulation of glucocerebroside, the disease also leads to other ailments. An increased risk of cancer in Gaucher's disease, especially in late adulthood, has been reported in the literature.<sup>6, 7</sup> Of all neoplastic transformations, hematologic cancers are

significantly more prevalent in Gaucher's disease. This is the first reported case in the literature of Gaucher's disease associated with a translocation between chromosomes 5 and 14. Such a translocation has also been reported in acute lymphoblastic leukemia.<sup>8,9</sup> In this case, the patient did not have a hematological malignancy, but he shares the (5,14) translocation of certain types of ALL. More analysis of additional cases is needed order to correlate such an abnormality with hematologic malignancies.

As for his symptoms, the patient did not have the classical physical exam finding of hepatosplenomegaly. However, when working with geriatrics, one must remember that presentations of diseases are typically atypical. The less common features – such a thrombocytopenia - did occur in this patient. He had increased ferritin levels and increased iron deposition in the Gaucher cells. The occurrence of pancytopenia in patients with Gaucher's disease, as in this case, is due to the occupancy of Gaucher cells in the bone marrow, which out-compete with hematopoietic precursors and therefore decrease bone marrow functioning.

As seen by this patient and previous studies, Gaucher's disease does occur even in the elderly. However, an increased level of suspicion is needed because the patient might not present with hepatosplenomegaly or other classical symptoms of Gaucher's disease.<sup>10</sup> It is important for the astute clinician to include Gaucher's disease in the differential diagnosis for patients of any age, especially for those with high ferritin levels and pancytopenia.

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