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## CORRESPONDENCE

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### IgD Myeloma and Acute Myelomonocytic Leukemia

*To the Editor:*

In response to a prior editorial in *Lancet*,<sup>1</sup> we are reporting a case of IgD multiple myeloma that developed into acute myelomonocytic leukemia. As far as can be determined from reviewing the literature, there have been no prior reports of this. Krachmer<sup>2</sup> reported in 1974 a review of 26 cases where approximately 73.7% of the patients developing acute myeloblastic leukemia from multiple myeloma were of IgG type and 26.3% were IgA type.

Our patient was a 57-yr-old black female, first diagnosed on March 17, 1971, following a history of low back pain intermittently for 2 yr, with a 15-lb weight loss. At the initial workup, the patient was found to have osteolytic lesions of the ribs with deformity of several thoracic vertebrae, Hb 10 g/100 ml, WBC 4900/cu mm with a differential of 65% segmented neutrophils, 3% bands, 21% lymphocytes, 11% monocytes, platelet count 180,000/cu mm, calcium 12 mg/100 ml, blood urea nitrogen 21 mg/100 ml, and creatinine 1.6 mg/100 ml. The immunoglobulin diffusion study revealed the immunoglobulin G (IgG) level to be 860 mg/100 ml, IgA level 62 mg/100 ml, IgM 35 mg/100 ml, and IgD 1150 mg/100 ml. Protein electrophoresis on urine demonstrated 7.9 mg of protein/100 ml. Protein immunoglobulin electrophoresis of the urine was not obtained. A bone marrow biopsy at that time revealed 34% myeloma cells. The patient was started on melphalan 4 mg p.o. t.i.d. for 4 days, prednisone 200 mg a day p.o. for 5 days, and procarbazine 50 mg p.o. q.i.d. daily for 6 days on a 6-wk cycle. On September 8, 1971, immunodiffusion studies revealed the IgG level to be 1100 mg/100 ml, IgA level 180 mg/100 ml, IgM level 44 mg/100 ml, and IgD level 17 mg/100 ml. On 7/31/72, during an admission to the Detroit General Hospital, the patient was found to have an infiltrative squamous cell carcinoma of the cervix which was stage IA. She was treated with conization of the cervix and received cobalt irradiation and radium implants. The patient sustained a pathologic fracture of the right humerus on January 11, 1974, at which time her chemotherapy was changed from melphalan, prednisone, and procarbazine

to cytoxan 50 mg p.o., b.i.d. An immunodiffusion study done at this time revealed IgG 1400 mg/100 ml, IgA 180 mg/100 ml, IgM 30 mg/100 ml, IgD 13 mg/100 ml, with Hb 9.8 g/100 ml. The patient left the state of Michigan to live in Alabama in June 1974 and was lost to follow-up until September 1975. She was again seen on September 26, 1975 with a WBC 1000/cu mm and it was noted that promonocytes and monoblasts were present on the peripheral smear. The patient refused a bone marrow biopsy and aspirate, and again left the state of Michigan to return to Alabama. Cytoxan therapy was withheld at this time. Immunodiffusion study demonstrated IgG to be 2480 mg/100 ml, IgA 260 mg/100 ml, IgM 70 mg/100 ml, and IgD 6.2 mg/100 ml. The patient again returned to Detroit General Hospital on August 3, 1976 with shortness of breath. At this time, the platelet count was 15,000/cu mm, Hb 6.3 g/100 ml, WBC 4500/cu mm with a differential count of 11% PMN, 15% bands, 29% lymphocytes, 44% promonocytes, and 1% eosinophils. Bone marrow exam demonstrated decreased storage iron with a sideroblast count of 76% with rare ringed sideroblasts. The bone marrow aspirate revealed a differential of 43% blasts, 2% promyelocytes, 5% metamyelocytes, 4% bands, 5% segmented neutrophils, 11% lymphs, 11% mature plasma cells, 3% basophilic normoblasts, 11% polychromatophilic normoblasts, 2% orthochromic normoblasts, 2% eosinophils, and 1% basophils. The patient was also found to have a squamous cell carcinoma of the vulva, stage I. The patient was readmitted for the last time to Detroit General Hospital on September 1, 1976 for massive hematuria and weakness. At this time the patient had a WBC of 6000/cu mm with a differential count of 25% segmented neutrophils, 24% bands, 50% promonocytes, 1% monoblasts, 1 nucleated RBC/100 nucleated cells with a Hb of 4.7 g/100 ml, and platelet count 2000/cu mm. The patient during the admission received multiple blood and platelet transfusions, but died on September 3, 1976.

Our patient is typical of the prior case report,<sup>3</sup> indicating that patients developing acute leukemia with multiple myeloma tend to have a

long survival, with evidence of response to therapy. Also, they always develop a myelomonocytic or myelocytic form of leukemia. However, our case is interesting in that it is the only one noted in the literature that had the IgD form of multiple myeloma. Both Karchmer et al.<sup>2</sup> and Rosner and Grunwald<sup>3</sup> have indicated a possible leukemogenic role for alkylating agents such as melphalan. Alexanian<sup>4</sup> has indicated that in patients being treated for multiple myeloma, once a 75% reduction in their immunoglobulin is achieved after 12 mo of therapy, there is no advantage in additional maintenance

therapy. If the alkylating agents are leukemogenic in patients with multiple myeloma, then perhaps we should stop such therapy if we have achieved a response defined by a 75% reduction in immunoglobulin in at least 1 yr of therapy.

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## Megathrombocytes and Sickle Cell Anemia

*To the Editor:*

In their recent paper, Freedman and Karparkin have reported an elevated platelet count and megathrombocyte number in all eight patients with sickle cell anemia (SCA) they followed over a 6-mo period.<sup>1</sup> They suggest that the autoinfarcted spleen and, therefore, the lack of splenic sequestration would be responsible for the elevation of both platelet counts and megathrombocyte number. Since both values have been found to fall significantly during the occlusive crises, it is postulated that a hyperutilization of functionally active platelets is taking place during this event. From these observations and from similar findings made by others, they conclude that the platelets may be involved in the vascular pathology of this disorder.

These observations are in accord with our own findings in patients with SCA, although we have had a different objective and have used other techniques. Since SCA is the only chronic hemolytic anemia presenting a progressively atrophic spleen, we have examined comparatively the peripheral blood smears of 20 patients with SCA and smears made from blood obtained from patients with other types of chronic hemolytic anemias with large spleens; the buffy coat smears and those obtained from platelet-rich plasma were found to provide more infor-

mation than the ordinary smears. Besides the findings concerning the red cell and granulocytic lines, not pertinent for the present discussion, the following findings were noted in the megakaryocyte-platelet system:

1. A significant number (100-400 per cu mm) of small, nonlobulated, circulating megakaryocytes was observed in every patient; the cytoplasm of some of these cells had a definite platelet-containing and -releasing appearance, and, as a last stage, many naked nuclei were observed. No attempt was made to relate this phenomenon with the clinical stages of the disease.
2. By tracing the source of these cells, the first recognizable megakaryocyte in the peripheral blood smear was found to be a lymphoid cell, the cytoplasm of which showed a definite platelet-like appearance.
3. Not only were many platelets larger than normal and hypergranulated (megathrombocytes), but in almost every microscopic field, huge fragments of megakaryocytic cytoplasm, some of them several times the size of a red cell, and many elongated forms were also present. There is no doubt that these structures, which presumably act as multiple platelet units, escape Coulter Counter registration.

The smears obtained from platelet-rich plasma showed in many instances trapped megakaryocytic nuclei surrounded by different