tics: a patchy eosinophilic infitrate affecting the distal air spaces and absence of hyperplastic pneumocytes (type II) with bizarre shapes usually noted in cases of bleomycin-induced interstitial pneumonitis.[10] The pathologic changes described in our patient are different from those described for bleomycin hypersensitivity pneumonitis and appear to be a classic bleomycin intestitial pneumonitis.[11] This case illustrates that life threatening bleomycin PT, although unusual, can occur with very low doses of bleomycin. The case also illustrates that prompt recognition is essential since some patients have a favorable response to corticosteroid therapy. Further studies are needed for a better understanding of the mechanisms involved in the development of PT induced by bleomycin.

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***Key words***

*Bleomycin, pulmonary toxicity, Hodgkin's disease*

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## References

1. Comis RL. Bleomycin pulmonary toxicity: current status and future directions. Semin Oncol 1992; 19:64-70.
2. Dalgleish AG, Woods RL, Levi JA. Bleomycin pulmonary toxicity: its relationship to renal dysfunction. Med Pediatr Oncol 1984; 12:313-7.
3. White DA, Stover DE. Severe bleomycin-induced pneumonitis; clinical features and response to corticosteroids. Chest 1984; 86:723-8.
4. Simpson AB, Paul J, Graham J, Kaye SB. Fatal bleomycin pulmonary toxicity in the west of Scotland 1991-95: a review of patients with germ cell tumours. Br J Cancer 1998; 78:1061-6.
5. Haas CD, Coltman CA, Gottlieb JA, et al. Phase II evaluation of bleomycin: a southwest oncology group study. Cancer 1976; 38:8-12.
6. McLeod BF, Lawrence HJ, Smith DW, Vogt PJ, Gandara DR. Fatal bleomycin toxicity from a low cumulative dose in a patient with renal insufficiency. Cancer 1987; 60:2617-20.
7. Ganick DJ, Peters ME, Hafez GR. Acute bleomycin toxicity. Am J Pediatr Hematol Oncol 1980; 2:249-52.
8. Bechard DE, Fairman RP, Deblois GG, et al. Fatal pulmonary fibrosis from low-dose bleomycin therapy. South Med J 1987; 80:646-9.
9. Wilson KS, Worth A, Richards AG, Ford HS. Low-dose bleomycin lung. Med Pediatr Oncol 1982; 10:283-8.
10. Holoye PY, Luna MA, MacKay B, Bedrossian CWM. Bleomycin hypersensitivity pneumonitis. Ann Intern Med 1978; 88:47-9.
11. Luna MA, Bedrossian CWM, Lichtiger B, Salem A. Interstitial pneumonitis associated with bleomycin therapy. Am J Clin Pathol 1972; 58:501-10.

## Intrauterine anemia due to parvovirus B19: successful treatment with intravenous immunoglobulins

Sir,

Fetal hydrops is a frequent complication of B19 infection during pregnancy.[1-3]

We report the case of an infant who, after intrauterine B19 infection, developed hydrops, and, subsequently, severe chronic anemia which responded to intravenous immunoglobulins (IVIGs).

A 2,330 g male was born by Cesarean section at 35 weeks gestation after ultrasonography had shown fetal hydrops, pericardial effusion and ventricular hypertrophy. At 22 weeks, the patient's brother had developed erythema infectiosum. At birth, generalized edema and hepatosplenomegaly were present, and rales were heard over the entire chest.

Hb was 49 g/L, platelets $42\times10^9$/L, reticulocytes $16.8\times10^9$/L. The peripheral blood smear showed severe anisopoikilocytosis, giant platelets, myelocytes and metamyelocytes. In the bone marrow, the erythroid precursors were vacuolated, and dyserythropoiesis, with *dog-ear* projections, was evident in the proerythroblasts[1] (Figure 1). B19 infection was suspected, and confirmed, a few days later, by B19 DNA detected in the infant's bone marrow and placenta by PCR.[4] Serum IgG and IgM for B19 were negative. The patient's mother and brother had B19 specific serum IgG but no specific B19 IgM. Indirect Coombs' test was negative.

The infant required mechanical ventilation for four days, and two platelet transfusions because of platelet count $<20\times10^9$/L. Twelve units of packed erythrocytes were needed to keep the Hb level above 60 g/L. In accordance with previous literature reports,[5,6] at the age of 10 months IVIGs (1 g/kg every three weeks) were started and continued for 8 months (Figure 2). PCR for B19 was still positive in the bone marrow at 1 and 12 months of age. At age

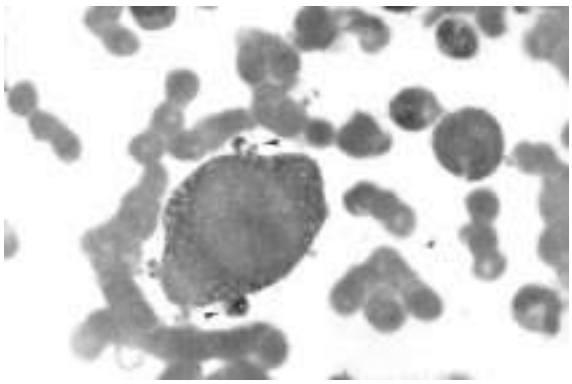

**Figure 1. Bone marrow aspirate with giant vacuolated proerythroblasts. The arrows indicate the *dog-ear* projections of the cytoplasmic membrane.**

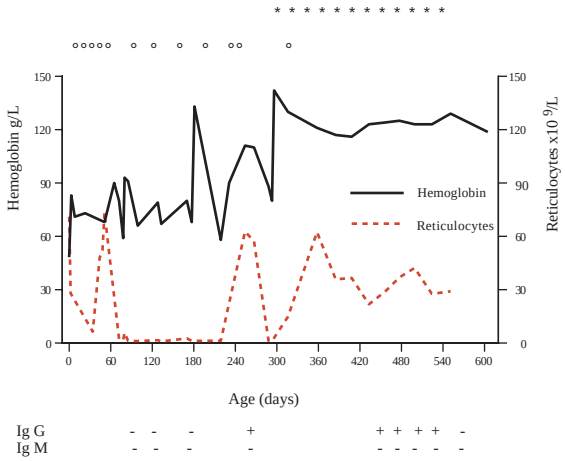


**Figure 2. Graph of hemoglobin and reticulocyte values during parvovirus B19 infection. °indicate packed red cell transfusions; *immunoglobulin cycles. Antibody positivity to parvovirus B19 is reported underneath.**

18 months the anemia gradually resolved, liver and spleen returned to normal size, and PCR for B19 became negative in the bone marrow. B19 specific IgG, positive during IVIG therapy, became negative after the treatment. Thirty months after the end of IVIG therapy the child's Hb is stable at about 120 g/L, and he is completely well.

Successful treatment of severe B19-induced intrauterine anemia after 4 months of transfusions was reported in 1994.[7] Three other infants with anemia due to transplacental B19 infection were treated with IVIGs:[2] two remained transfusion-dependent and one died after one course of IVIGs. B19 DNA was detected in their bone marrow but not in their serum. Despite persistent anemia, PCR analysis of the bone marrow became negative after IVIG therapy. Successful IVIG treatment of neurologic symptoms and anemia attributed to B19 infection was reported in a three-month-old hypogammaglobulinemic infant.[8]

Our patient was successfully treated with 12 cycles of IVIGs, with disappearance of the virus from the bone marrow. The immaturity of the fetal immune system, and the brief half-life of fetal IgM[7] could explain the lack of B19 specific IgM. The brief thrombocytopenia could be attributed to reversible damage to megakaryocytes.[9]

To our knowledge this is the first reported case of proven B19-induced intrauterine anemia, in an otherwise normal child, which was successfully treated by IVIGs. If necessary, preparations of IVIGs with high titer of natural B19 specific antibodies could be tried.

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***Key words***

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## References

1. Harris JW. Parvovirus B19 for the hematologist. Am J Hematol 1992; 39:119-30.
2. Brown KE, Green SW, Antunez de Mayolo J, et al. Congenital anemia after transplacental B19 parvovirus infection. Lancet 1994; 343:895-6.
3. Mustafà MM, McClain KL. Diverse hematologic effects of parvovirus B19 infection. Ped Clin N Am 1996; 43:809-21.
4. Musiani M, Azzi A, Zerbini M, et al. Nested polymerase chain reaction assay for the detection of B19 parvovirus DNA in human immunodeficiency virus patients. J Med Virol 1993; 40:157-60.
5. Finkel TH, Török TJ, Ferguson PJ, et al. Chronic parvovirus B19 infection and systemic necrotising vasculitis: opportunistic infection or aetiological agent? Lancet 1994; 343:1255-8.
6. Young NS. Parvovirus infection and its treatment. Clin Exp Immunol 1996; 104:26-34.
7. Donders GG, Van Lierde S, Van Elsacker-Niele AM, Moerman P, Goubau P, Vandenberghe K. Survival after intrauterine parvovirus B19 infection with persistence in early infancy: a two-year follow-up. Pediatr Infect Dis J 1994; 13:234-6.
8. Nigro G, D'Eufemia P, Zerbini M, Krzysztofiak, Finocchiaro R, Giardini O. Parvovirus B19 infection in a hypogammaglobulinemic infant with neurologic disorders and anemia: successful immunoglobulin therapy. Pediatr Infect Dis J 1994; 13:1019-21.
9. Srivastava A, Bruno E, Briddell R, et al. Parvovirus B19-induced perturbation of human megakaryocytopoiesis in vitro. Blood 1990; 76:1997-2004.

## Intramural hematoma of stomach after splenectomy for idiopathic thrombocytopenic purpura

Sir,

We cared for a patient who developed a massive intramural hematoma of the stomach after splenectomy for refractory idiopathic thrombocytopenic purpura (ITP). This is the first report on this complication after splenectomy for ITP.

A 74-year old man with ITP underwent splenectomy following administration of high-dose immunoglobulin. His clinical course after the operation was uneventful, but the response was transient and his platelet count returned to the pre-operation levels within a week of splenectomy. On day 20 after the operation, when his platelet count was 15,000/µL, he suddenly complained of a severe chest pain radiating to the back and his blood pressure dropped