Brief Communication

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Autoimmune Thrombocytopenia and Neutropenia after Autologous Peripheral Blood Stem Cell Transplantation

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Autoimmune thrombocytopenia (AIP) after autologous hematopoietic stem cell transplantation occurs infrequently, with less than 10 cases being reported in the literature. Autoimmune neutropenia (AIN) develops even less frequently after AHSCT. We describe a case of AIP and AIN that developed 76 days after transplant and responded well to corticosteroid therapy.

A 19-year-old patient underwent autologous peripheral blood stem cell transplantation (APBSCT) for acute myeloid leukemia (AML). His full blood count pre-transplant showed a hemoglobin level of 12.3 g/dl, leukocytes of 5.6 × 10^9/l and a platelet count (PC) of 248 × 10^9/l. The conditioning regimen included busulphan and cyclophosphamide. Engraftment of neutrophils (absolute neutrophil count, ANC, >0.5 × 10^9/l) and platelets (unsupported PC >20 × 10^9/l) was documented on days 10 and 40 after transplantation, respectively. By day 68 the PC and ANC were 126 × 10^9/l and 3.3 × 10^9/l, respectively; however the PC and ANC fell to 4 × 10^9/l and 0.56 × 10^9/l, respectively, on day 76. The PC has remained less than 20 × 10^9/l over the next 3 weeks. Infusions of random single-donor platelets in an attempt to maintain the PC above 10 × 10^9/l were unsuccessful. There was gingival and cutaneous bleeding. Autoantibody screening including anticardiolipin antibody was negative. There was no evidence of viral or fungal infection. Bone marrow (BM) aspirate obtained on day 90 showed normal marrow with plentiful megakaryocytes and active granulopoiesis consistent with AIP and AIN. Peripheral blood lymphocyte subset study showed reduced CD4+ cells (4 cells/μl; normal ratio, 410–1,590), a low CD4:CD8 ratio (0.02; normal ratio 0.8–4.2) and normal CD8+ count. The patient received 60 mg prednisolone daily starting on day 96 that resulted in elevation of the PC and ANC to 99 × 10^9/l and 3.8 × 10^9/l, respectively, after 1 week of treatment. The PC and ANC remained above 150 × 10^9/l and 4.5 × 10^9/l during steroid therapy. On day 152 while receiving 30 mg prednisolone daily, he developed herpes zoster infection of the C2–C3 dermatomes. The skin lesions resolved with acyclovir and prednisolone was discontinued. When he was last seen on day 193, 20 days after discontinuation of prednisolone, the PC and ANC had decreased to 67 × 10^9/l and 0.72 × 10^9/l, respectively.

This patient clearly had immune-mediated thrombocytopenia and neutropenia as demonstrated by an increase in megakaryocytes and granulopoiesis in the BM in the presence of a low PC and ANC and a dramatic response to steroid therapy. Other causes of platelet and granulocyte destruction were excluded. Seven cases of AIP after autologous BM transplant or APBSCT (3 patients) have been reported in patients with AML, lymphoblastic lymphoma and breast carcinoma [1–5]. Only 1 case of AIP associated with AIN after allogeneic BM

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transplantation has been described [6]. To the best of our knowledge this is the first reported case of autoimmune thrombocytopenia and neutropenia following APBSCT for AML.

The etiology of the formation of autoantibodies after HSCT is not well known [1]. Imbalances in the helper/suppressor T-cell populations resulting in immune dysregulation and subsequent cytopenias have been reported after transplantation [7]. In our patient, stem cell damage by chemotherapy together with T-cell depletion could have contributed to the development of AIP and AIN.

Even though experience is limited, immune-modulating drugs seem to be quite effective in the treatment of this condition. Most cases, including the present case, responded to prednisolone, while steroid-refractory patients responded to intravenous immune globulin [1]. While uncommon, AIP and AIN should be considered in the differential diagnosis of severe thrombocytopenia and neutropenia in the post-transplant period. It should be recognized promptly as it may be life-threatening, yet usually responds well to immune-modulating drugs.

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