

The Balance between Thrombosis and Bleeding in Allogeneic Hematopoietic Stem Cell Transplant Recipients

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Patients with cancer have disturbances in the hemostasis which translates into an increased incidence of Thromboembolic Events (TEEs) as patients without cancer [1]. In addition, the presence of TEEs in cancer patients is associated with a poor prognosis [2]. Historically, among cancer patients, the incidence of thrombotic complications has been more frequent in solid tumors (especially carcinoma of the pancreas or brain tumors) with respect to hematological malignancies [1]. But recently, it is begun to recognize that the incidence of TEEs in hematological neoplasms is similar to that of solid tumors [3]. However, little is known about the incidence of TEEs in patients undergoing allogeneic Hematopoietic Stem Cell Transplantation (HSCT). The first published studies in this setting showed that HSCT recipients also develop TEEs, including venous thromboembolisms [4-6] and arterial events [7,8]. Therefore, a thromboprophylaxis strategy could be useful in selected patients after HSCT. However, this high incidence of TEEs in allogeneic HSCT has been analyzed without taking into consideration the high risk of bleeding of these patients due to prolonged severe thrombocytopenia and tissue damage caused by conditioning regimen or complications after HSCT [4,6,9-12]. Based on that, an analysis of the competing risks of hemorrhagic and TEEs in allogeneic HSCT recipients [13] showed that bleeding complications were more frequent than TEEs (the cumulative incidence at 14 years for bleeding episodes was 30.2% vs. 11.8% and 4.1% for venous and arterial TEEs, respectively). The development of extensive chronic Graft Versus Host Disease (GVHD) was the only risk factor for the occurrence of venous TEEs [OR=2.85, 95% CI (1.20-6.80)]. While advanced disease status, myeloablative conditioning regimen, HSCT from umbilical cord, anticoagulation after HSCT, grade acute III-IV GVHD and thrombotic microangiopathy were associated with an increased risk of bleeding. But the most important issue was that bleeding episodes were associated with increased mortality, while TEEs were not. The median overall survival of patients with bleeding episodes was only 15 months, as compared to patients without bleeding episodes (122 months) ($p < 0.001$) [13]. Of note, the use of anticoagulation after allogeneic HSCT appeared predisposed to developing bleeding, so venous thromboprophylaxis should carefully considered in selected allogeneic HSCT recipients (such as patients with extensive chronic GVHD). However, since we do not know the efficacy and safety of anticoagulation in this population, more studies are needed to answer this question.

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