Journal of Hematology & Thromboembolic Diseases

Labrador and González-Porras, J Hematol Thromb Dis 2014, 2:1
DOI: 10.4172/2329-8790.1000e105

Editorial Open Access

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.

References

1. Stein PD, Beemath A, Meyers FA, Skaf E, Sanchez J, et al. (2006) Incidence of venous thromboembolism in patients hospitalized with cancer. Am J Med 119: 60-68.
2. Sørensen HT, Mellemkjaer L, Olsen JH, Baron JA (2000) Prognosis of cancers associated with venous thromboembolism. N Engl J Med 343: 1846-1850.
3. Falanga A, Marchetti M (2009) Venous thromboembolism in the hematologic malignancies. J Clin Oncol 27: 4848-4857.
4. Gerber DE, Segal JB, Levy MY, Kane J, Jones RJ, et al. (2008) The incidence of and risk factors for venous thromboembolism (VTE) and bleeding among 1514 patients undergoing hematopoietic stem cell transplantation: implications for VTE prevention. Blood 112: 504-510.
5. Gonsalves A, Carrier M, Wells PS, McDiarmid SA, Huebsch LB, et al. (2008) Incidence of symptomatic venous thromboembolism following hematopoietic stem cell transplantation. J Thromb Haemost 6: 1468-1473.
6. Pihusch R, Salat C, Schmidt E, Göhring P, Pihusch M, et al. (2002) Hemostatic complications in bone marrow transplantation: a retrospective analysis of 447 patients. Transplantation 74: 1303-1309.
7. Tichelli A, Bucher C, Rovó A, Stussi G, Stern M, et al. (2007) Premature cardiovascular disease after allogeneic hematopoietic stem-cell transplantation. Blood 110: 3463-3471.
8. Tichelli A, Passweg J, Wojcik D, Rovo A, Harousseau JL, et al. (2008) Late cardiovascular events after allogeneic hematopoietic stem cell transplantation: a retrospective multicenter study of the Late Effects Working Party of the European Group for Blood and Marrow Transplantation. Haematologica 93: 1203-1210.
9. Nevo S, Enger C, Swan V, Wojno KJ, Fuller AK, et al. (1999) Acute bleeding after allogeneic bone marrow transplantation: association with graft versus host disease and effect on survival. Transplantation 67: 681-689.
10. Bacigalupo A (2003) Haemopoietic stem cell transplants: the impact of haemorrhagic complications. Blood Rev 17 Suppl 1: S6-10.
11. Pihusch M (2004) Bleeding complications after hematopoietic stem cell transplantation. Semin Hematol 41: 93-100.
12. Holler E, Kolb HJ, Greinix H, Perrotin D, Campilho F, et al. (2009) Bleeding events and mortality in SCT patients: a retrospective study of hematopoietic SCT patients with organ dysfunctions due to severe sepsis or GVHD. Bone Marrow Transplant 43: 491-497.
13. Labrador J, Lopez-Anglada L, Perez-Lopez E, Lozano FS, Lopez-Corral L, et al. (2013) Analysis of incidence, risk factors and clinical outcome of thromboembolic and bleeding events in 431 allogeneic hematopoietic stem cell transplantation recipients. Haematologica 98: 437-443.

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Received January 10, 2014; **Accepted** January 15, 2014; **Published** January 17, 2014

Citation: Labrador J, González-Porras JR (2014) The Balance between Thrombosis and Bleeding in Allogeneic Hematopoietic Stem Cell Transplant Recipients. J Hematol Thromb Dis 2: e105 doi: 10.4172/2329-8790.1000e105