

Bone marrow transplant related TTP [created by Paul Young 02/10/07]

pathogenesis

- The proposed mechanisms of TTP following HSCT include endothelial damage due to chemotherapy or cyclosporine that led to release of cytokines, such as tumor necrosis factor that precipitate a prothrombotic state
- It is important to note that deficiency of von Willebrand factor- cleaving protein, which is implicated in the pathogenesis of classic TTP, does not play a role in TTP following HSCT.

differential diagnosis

- The most important differential diagnosis of TTP following HSCT is cyclosporine toxicity, which may lead to microangiopathic hemolytic anemia, renal impairment, and neurologic complications.

treatment

- The management of TTP following HSCT includes discontinuing cyclosporine or tacrolimus and avoiding platelet transfusion.
- The role of plasma exchange, which is the mainstay of treatment in idiopathic TTP, is not clear. Furthermore, the response to plasma exchange in cases of TTP following HSCT is not as good as that with idiopathic TTP (25% vs 90%, respectively.)

prognosis

- The prognosis of TTP following HSCT is generally poor, and the mortality rate is around 70%
- Mortality is higher if the syndrome develops in the first 120 days following HSCT, after treatment with cyclosporine or tacrolimus, or if there is neurologic deficit. The only predictor of resolution of TTP is the absence of renal impairment.

Epidemiology:

- It is more commonly identified in allogeneic HSCT recipients (prevalence, 5-15%); however, TTP is also seen after autologous HSCT.

time course

- The median time of onset of TTP is 44 days following HSCT.

clinical features

- Classic pentad of TTP:
  - Fevers
  - Anaemia (microangiopathic haemolytic)
  - Thrombocytopenia
  - Renal Impairment
  - Neurological symptoms
- Hemolytic uremic syndrome, which has also been described following HSCT, is similar to TTP but differs in the severity of renal impairment.

risk factors

- The main risk factors for TTP following HSCT are:
  - (i) older age,
  - (ii) female sex,
  - (iii) human leukocyte antigen mismatching,
  - (iv) high-grade acute GVHD,
  - (v) cyclosporine treatment, and
  - (vi) history of severe infection