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Thrombocytopenia in MDS: Incidence and Impact

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Introduction: Despite limited data being available regarding their incidence and clinical relevance, both thrombocytopenia and platelet dysfunction are known to contribute to hemorrhagic complications in myelodysplastic syndromes (MDS). Using a retrospective chart review and literature searches we evaluated the impact of thrombocytopeniain MDS.
Methods: Records for all patients referred to the MD Anderson Cancer Center (MDACC) since 1980 were reviewed. Literature on MDS (Jan 1980-Nov 2005) was identified using MEDLINE, EMBASE, and Cochrane databases. Key websites were used to identify additional references. For consistency the threshold for thrombocytopenia was defined as a platelet count <100×109/L.
Results: Review of the MDACC database identified 1605/2410 (67%) patients with thrombocytopenia at referral. Severe thrombocytopenia (<20×109/L) was observed in 425/2410 (18%) patients. Using the International Prognostic Scoring System (IPSS), 399/2410 (17%) patients had intermediate-2 or high risk disease (83% and 25% of patients had platelet counts of <100×109/L and <20×109/L respectively). Corresponding event frequencies decreased to 21% and 3% in patients with low or intermediate-1 risk MDS (264/2410; 11%). Of 968 patients who died, 460 had a coded cause of death (hemorrhage involvement, 20%; hemorrhage as the only cause, 10%). Eighty-five key references were identified: clinical consequences of thrombocytopenia, n=16; MDS therapies, n=60; guidelines, n=9. Overall the prevalence of thrombocytopenia was 40–65%. Baseline thrombocytopenia rates were reported in 19/60 (32%) references. The median frequency of thrombocytopenia prior to MDS therapy was 65% (range, 23–93%). The incidence of MDS treatmentrelated thrombocytopenia was >50% in studies involving lenalidomide, azacitidine, or a combination of idarubicin, cytarabine and topotecan. Treatment-related thrombocytopenia was reported in studies involving tipifarnib, linomide, decitabine, all-trans retinoic acid, and sirolimus. The incidence of hemorrhagic complications was variable (3–53%) and the frequency of hemorrhagic deaths was 14–24%.
Discussion: Thrombocytopenia is common in MDS with a greater prevalence in high risk IPSS categories. The incidence of severe bleeding in MDS is higher than reported in current guidelines or reviews. Many approved and investigational MDS therapies either cause or exacerbate pre-existing thrombocytopenia. Novel therapies targeting thrombocytopenia in MDS are needed.