Biomarkers predict outcomes for resistant GVHD

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Major-Monfried H, Renteria AS, Pawarode A, Reddy P, Ayuk F, Holler E, Efebera YA, Hogan WJ, Wölfl M, Qayed M, Hexner EO, Wudhikarn K, Ordemann R, Young R, Shah J, Hartwell MJ, Chaudhry MS, Aziz M, Etra A, Yanik GA, Kröger N, Weber D, Chen Y-B, Nakamura R, Rösler W, Kitko CL, Harris AC, Pulsipher M, Reshef R, Kowalyk S, Morales G, Torres I, Özbek U, Ferrara JLM, Levine JE. MAGIC biomarkers predict long-term outcomes for steroid-resistant acute GVHD. *Blood*. 2018; 131(25):2846-2855.

1. **Your patient is a 67-year-old man with acute graft-versus-host disease (GVHD). Based on the MAGIC clinical study by Major-Monfried and colleagues, which of the following statements about the prognostic value of biomarker scores and clinical features after 1 week of steroid treatment of GVHD is correct?**

   ☐ Initial response to systemic steroids correlated with response at 4 weeks, but not with 1-year nonrelapse mortality (NRM) or overall survival (OS)

   ☐ The MAGIC algorithm uses serum biomarker suppressor of tumorigenicity-2 (ST2) and regenerating islet-derived protein 3-α (REG3α) to generate a probability for NRM

   ☐ GVHD severity (Minnesota risk) was not a significant predictor of NRM in multivariate analysis

   ☐ Biomarkers were unable to predict NRM or OS in patients with steroid resistance

2. **Based on the clinical study by Major-Monfried and colleagues, which of the following statements about the prognostic value of MAGIC biomarker scores compared with that of early clinical response to GVHD treatment is correct?**

   ☐ Early clinical response to GVHD treatment predicted prognosis better than biomarkers

   ☐ In univariate analyses, only biomarker probability consistently and significantly predicted response to treatment at 4 weeks and 1-year NRM

   ☐ Receiver operating curves showed an area under the curve (AUC) of 0.82 for biomarker probability, greater than for steroid response (0.68, *P* = .004) and Minnesota risk (0.72, *P* = .005)

   ☐ An algorithm combining ST2 and REG3α concentrations, early treatment response, and Minnesota risk to predict 1-year NRM produced an AUC markedly higher than for biomarkers only

3. **Based on the clinical study by Major-Monfried and colleagues, which of the following statements about the clinical implications of the prognostic value of biomarker scores generated after 1 week of steroid treatment of GVHD is correct?**

   ☐ MAGIC biomarker probabilities generated after 1 week of systemic treatment of GVHD should prove useful in developing better treatment strategies

   ☐ Partial responses to steroids in early GVHD always require additional treatment

   ☐ There has been considerable progress in the last several decades in validating new treatments for GVHD

   ☐ The study findings apply to patients receiving GVHD prophylaxis regimens of posttransplant cyclophosphamide, T-cell depletion, and tacrolimus/sirolimus

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