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Continuing Medical Education (CME) Questions

Detection and evolution of preleukemic clones

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Berger G, Kroeze LI, Koorenhof-Scheele TN, de Graaf AO, Yoshida K, Ueno H, Shiraishi Y, Miyano S, van den Berg E, Schepers H, van der Reijden BA, Ogawa S, Vellenga E, Jansen JH. Early detection and evolution of preleukemic clones in therapy-related myeloid neoplasms following autologous SCT. *Blood*. 2018;131(16):1846-1857.

1. Your patient is a 63-year-old man diagnosed with a therapy-related myeloid neoplasm (tMN) after autologous stem cell transplantation (ASCT) for multiple myeloma. According to the case series studied by Berger and colleagues using whole-exome sequencing (WES) and targeted deep sequencing (TDS) in sequential (pre-)tMN samples, which of the following statements about mutations in tMNs compared with those in de novo myelodysplastic syndrome (MDS) is correct?

- ☐ WES showed a significantly higher number of mutations in de novo MDS than in tMNs
- ☐ The most frequent cytogenetic abnormalities in tMNs were isolated abnormalities of chromosome 7
- ☐ Mutations found in tMNs carried a clear aging-related signature similar to that in de novo MDS
- ☐ Mutations in the tumor suppressor gene *TP53* was the most frequently identified somatically acquired mutation in tMN cases

2. According to the case series studied by Berger and colleagues using WES and TDS in sequential (pre-)tMN samples, which of the following statements about origination and development of tMNs after ASCT is correct?

- ☐ tMNs after ASCT originate from hematopoietic stem cells bearing (pre-)tMN mutations that are present years before disease onset
- ☐ Post-ASCT treatment does not affect selection and outgrowth of preleukemic clones
- ☐ tMN mutations were identified only in myeloid cells
- ☐ The mutational spectra of tMNs overlapped those of the preceding malignancies

3. According to the case series studied by Berger and colleagues using WES and TDS in sequential (pre-)tMN samples, which of the following statements about the clinical implications of molecular findings in development of tMNs after ASCT is correct?

- ☐ tMNs respond well to conventional chemotherapy and have a good prognosis
- ☐ This study definitively identified mutations and clinical features predicting tMN development after ASCT
- ☐ In the future, early detection of premalignant clones and monitoring of their evolutionary trajectory may help predict tMN development and guide early intervention
- ☐ The study findings argue against the need for regular monitoring of peripheral blood counts after ASCT

DOI 10.1182/blood-2018-03-838979