

The reliability of bone marrow cytology as response criterion in metastatic neuroblastoma

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Abstract

Background: The quantitative assessment of neuroblastoma cell content in bone marrow aspirates for response evaluation has been introduced recently. Data on the concordance of interobserver reports are lacking so far. **Methods:** Investigators of seven European countries representing national reference or large oncological centres convened in 2016. They agreed to quantitatively assess routine bone marrow smears of the participating institutions and to discuss the discrepant results in joint meetings. **Results** From 2017 through 2019, three cytology rounds with 24, 28, and 28 bone marrow samples were run evaluating the representativity of the smears (yes/(restricted)/no) and the presence of tumors cells (yes/no and %). The comparison of the reports using κ (Fleiss) and α (Krippendorff) statistics demonstrated no robust reliabilities. The agreement on the representativity was moderate to poor, on the presence of tumor cells moderate to good and on the percentage of tumor cells slight to moderate. Though the unquestioned value of cytology to detect even tiny metastatic cells in bone marrow, the investigators unanimously agreed that a reliable quantification of the tumor cell content in bone marrow smears is unrealistic. For the key issue of representativity, a new practical definition was developed. **Conclusion** For any work with bone marrow aspirates the representativity of the material is of paramount importance. A practical definition is proposed. A reliable quantitative cytological assessment of tumor cell content in bone marrow aspirates is not feasible in metastatic neuroblastoma. Therefore its use as response criterion should be re-considered.

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