A Multicenter Study to Validate the Reproducibility of MSI Testing With a Panel of 5 Quasimonomorphic Mononucleotide Repeats.

Abstract:
Microsatellite instability (MSI) testing in clinics is becoming increasingly widespread; therefore, there is an urgent need for methodology standardization and the availability of quality control. This study is aimed to assess the interlaboratory reproducibility of MSI testing in archive samples by using a panel of 5 recently introduced, mononucleotide repeats (MNR). The quality control involved 8 European institutions. Participants were supplied with DNA extracted from 15 archive colon carcinoma samples and from the corresponding normal tissues. Every group was asked to assess the MSI status of the samples by using the BAT25, BAT26, NR21, NR24, and NR27 mononucleotide markers. Four institutions repeated the analysis using the NCI reference panel to confirm the results obtained with the MNR markers. The overall concordance among institutions for MSI analyses at single locus level was 97.7% when using the MNR panel and 95.0% with the NCI one. The laboratories obtained a full agreement in scoring the MSI status of each patient sample, both using the mononucleotide and the NCI marker sets. With the NCI marker set, however, concordance was lowered to 85.7% when considering the MSI-Low phenotype. Concordance between the 2 panels in scoring the MSI status of...
each sample was complete if no discrimination was made between MSI-Stable and MSI-L, whereas it dropped to 76.7% if MSI-L was considered. In conclusion, the use of the MNR panel seems to be a robust approach that yields a very high level of reproducibility. The results obtained with the 5 MNR are diagnostically consistent with those obtained by the use of the NCI markers, except for the MSI-Low phenotype.

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