

## ASSESSMENT OF CONCORDANCE BETWEEN IMMUNOHISTOCHEMISTRY AND MSI ANALYSIS AND THEIR ASSOCIATION WITH CLINICOPATHOLOGICAL FEATURES IN MALAYSIAN COLORECTAL CANCER PATIENTS

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### ABSTRACT

**Introduction:** Colorectal cancer (CRC) is the second most common tumour in Malaysia. Universal screening for the identification of microsatellite instability/mismatch repair (MSI/MMR) status in CRC patients is recommended by several guidelines. The detection of MSI/MMR status in CRC patients is not only essential to identify Lynch Syndrome (LS), but it also has predictive and prognostic values. The study aimed to investigate the MMR and MSI status among CRC patients as well as to assess the concordance between immunohistochemistry (IHC) and MSI analysis.

**Method:** Formalin-fixed paraffin-embedded (FFPE) tissue blocks of 123 CRC patients were retrieved for the years 2017-2018. For IHC and MSI analysis, EnVision™ FLEX, Mini Kit, High PH, and MSI Analysis System 1.2 (Promega) were utilized, respectively. MSI analysis was performed on selected deficient mismatch repair (dMMR) and proficient mismatch repair (pMMR) cases.

**Results:** IHC detected 11.4% (14 out of 123) patients as dMMR and 88.6% (109 out of 123) as pMMR. MSI analysis identified 26% (13 out of 50) patients as MSI-H, 6% (3 out of 50) patients as MSI-L, and 64% (32 out of 50) patients as MSS. Both the IHC and MSI analysis showed perfect agreement (0.896, Kappa value) for the recognition of dMMR or MSI-H CRC patients while demonstrating only 4% (2 out of 50) discordant results. Almost all dMMR patients detected by IHC were recognized by MSI analysis as MSI-H except one.

**Conclusion:** The significant prevalence of dMMR in the current cohort supports the recommendation that the assessment of MSI/MMR status should be addressed in CRC patients. The selection of the choice method may be based on the availability of expertise and equipment. Since IHC is an affordable, reproducible, and readily available in most histopathological laboratories, it can be used as a primary screening test to detect MSI/MMR status in CRC patients.

**Keywords:** assessment, immunohistochemistry MSI analysis, association, clinicopathological, colorectal, Malaysian