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Faizee, M.I.^a, Talib, N.A.^b, Hamdan, A.H.B.^b, Abdullah, N.Z.B.^b, Rahimi, B.A.^c, Haidary, A.M.^d, Saadaat, R.^d, Hanifi, A.N.^e

Concordance between immunohistochemistry and MSI analysis for detection of MMR/MSI status in colorectal cancer patients

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^a Department of Pathology, Faculty of Medicine, Kandahar University, Kandahar, Afghanistan

^b Department of Pathology and Laboratory, Kulliyyah of Medicine, International Islamic University Malaysia (IIUM), Pahang, Kuantan, Malaysia

^c Department of Pediatrics, Faculty of Medicine, Kandahar University, Kandahar, Afghanistan

^d Department of Pathology and Clinical Laboratory, French Medical Institute for Mother and Children (FMIC), Kabul, Afghanistan

^e Central Public Health Laboratory, Ministry of Public Health, Kabul, Afghanistan

Abstract

Background: Recently, screening of colorectal cancer (CRC) patients for mismatch repair/microsatellite instability (MMR/MSI) status is widely practiced due to its potential predictive and prognostic roles and a screening tool to reveal Lynch Syndrome (LS). The purpose of the study was to evaluate concordance between immunohistochemistry (IHC) and MSI analysis methods for detection of MMR/MSI status in colorectal cancer patients in Kuantan, Pahang. **Methods:** Fifty selected CRC cases of deficient mismatch repair (dMMR) and proficient mismatch repair (pMMR) which were identified immunohistochemically in the previous study were subjected to MSI analysis. MSI Analysis System 1.2 (Promega) was utilized. **Results:** The results of MSI analysis method showed MSI-High: 26% (13/50), MSI-Low: 6% (3/50), and Microsatellite Stable: 68% (34/50). The concordance was perfect (0.896, Kappa value) between MSI analysis and IHC methods for the assessment of MMR/MSI status in CRC patients. The discordance was only 4% (2/50). MSI analysis identified all dMMR cases determined by IHC except one case. The obtained frequency of dMMR and pMMR patients was 11.4% (14/123) and 88.6% (109/123) by IHC method, respectively. **Conclusion:** Our findings support the universal practice of evaluating the MMR/MSI status in all newly diagnosed CRC patients. Based on the perfect concordance of two methods, the method of choice is based on the availability of expertise and equipments. IHC is highly appreciable method due to its feasibility and reproducibility. © The Author(s) 2024.

Author Keywords

Colorectal cancer; IHC; MMR; MSI; MSI analysis

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International Islamic University MalaysiaIIUM

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Correspondence Address

Haidary A.M.; Department of Pathology and Clinical Laboratory, Afghanistan; email: ahmed.maseh9t9@gmail.com

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