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Immunohistochemical expression and microsatellite instability in endometrial carcinoma

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Background: Endometrial cancer (EC) is the fifth most common female cancer worldwide constituting 4.8% of cancer in women. In 2012, around 320,000 new cases of endometrial cancer were diagnosed worldwide (Ferlay et al., 2015). EC is a disease of older, postmenopausal women (i.e., the sixth and seventh decades of life) and is uncommon in young women; 2% to14% of endometrial carcinomas occur in women 40 years of age and younger. Most of these patients have an identifiable source of excess estrogen, while in a small subset the pathogenesis is related to mismatch repair abnormality and Lynch syndrome (Garg and Soslow, 2014). Mismatch repair (MMR) behave as tumor suppressors and the most clinically relevant include MLH1, MSH2, MSH6, and PMS2 (Frolova et al., 2015). MMR results in a strong mutator phenotype known as microsatellite instability (MSI), which is a hallmark of Lynch syndrome-associated cancers (Yamamoto & Imai, 2015).

Aim of the work: To detect the expression of MMR proteins in endometrial carcinoma cases using the immunohistochemical (IHC) technique (MLH1, MSH2, MSH6 and PMS2) with correlation to different clinicopathologic parameters.

Material and methods: In this study, the pathology files at the Pathology Department, Kasr Al Ainy Hospitals and Ahmed Maher Teaching Hospital were reviewed to randomly 60 endometrial carcinoma cases. Five-micron thick sections stained with hematoxylin and eosin (H&E) and MLH-1, MSH-2, MSH-6 and PMS-2 immunostains. Loss of MLH1 and PMS2 was interpreted as a likely abnormality in MLH1, whether by germline defect or epigenetic mechanism whereas isolated loss of PMS2 was considered likely due to a germline PMS2 mutation. Similarly, concurrent loss of MSH2 and MSH6 suggested an MSH2 germline defect, whereas isolated loss of MSH6 was suggestive of mutations in MSH6 alone.

Results: A statistically significant relationship exists between MMR IHC proteins and tumor grade. However, a statistically insignificant correlation was found between MMR IHC proteins and the age of patients; tumor histopathological types and FIGO stage.

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