



THE CLINICOPATHOLOGIC FEATURES OF COLORECTAL ADENOCARCINOMA WITH RESPECT TO MISMATCH REPAIR GENES AND KRAS STATUS: A RETROSPECTIVE STUDY

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Abstract – Objective: *KRAS and mismatch repair genes are two important molecular markers used in determining prognosis and probability of response to the targeted therapy in patients with colorectal cancer. In this study, the expression status of mismatch repair genes was investigated along with mutation in KRAS gene, and clinicopathologic features were also evaluated in these tumors.*

Patients and Methods: *Clinical and pathological data were collected from 153 known cases of colorectal adenocarcinoma. Expression status of mismatch repair genes was assessed using immunohistochemistry (IHC) technique. Mutation in codons 12 and 13 of KRAS gene was evaluated using pyrosequencing technique. Relationship between clinical and pathologic features of the patients with status of MMR and KRAS markers was also investigated.*

Results: *A total of 16.3% of tumors lacked expression at least in one of MLH1, MSH2, MSH6, and PMS2 proteins. KRAS was found to be mutated in 37.9% of the patients. Tumors were classified into four categories: dMMR + wild type KRAS (12.4%), dMMR + mutated KRAS (3.9%), pMMR + wild type KRAS (49.6%), and pMMR + mutated KRAS (33.9%). The dMMR tumors mostly had features, such as female gender, proximal location, mucinous production, increased number of lymph nodes, Signet ring cell, and vascular invasion. Compared to pMMR + wild type tumors, pMMR + mutated KRAS tumors were more associated with female gender, proximal location, mucinous component, and lymph node metastasis.*

Conclusions: *Results of this study indicated a relationship between MMR status and presence of mutated KRAS with clinicopathologic features of colorectal tumors. Knowledge about these markers along with pathological features can help us to predict metastatic progression and prognosis of the disease.*

KEYWORDS: *Clinicopathologic, MMR, KRAS, CRC.*

INTRODUCTION

Colorectal cancer (CRC) is the second most common cancer in men and women, and the second cause of cancer-related deaths in the world. In 2018, 1.8 million people were affected by CRC

and 880,000 people died from colorectal cancer worldwide. In Iran, CRC is the second most common cancer and is the third cause of cancer-related deaths¹. Like most other cancers, CRC is also a heterogeneous disease, in which combination of genetic, epigenetic, and environmental factors



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