

Different Clinicopathological Characteristics in Indonesian Colorectal Patients with NRAS Mutations and HER2 Expression

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Abstract

Abstract Objective: Colorectal cancer (CRC) is the world's third most common type of cancer. Data in Indonesia based on GLOBOCAN in 2020 shows CRC in the fourth position with around 35,000 new cases each year. The pathogenesis mechanisms of CRC are complex and heterogeneous, one of which is the involvement of NRAS (Neuroblastoma Rat Sarcoma viral oncogene homolog) mutations which play a role in cell growth regulation, as well as the expression of Human epidermal growth factor receptor 2 (HER2). This study aims to assess the association of subject characteristics and NRAS mutations with HER2 expression in CRC. **Methods:** This research is a cross-sectional study. There were 58 patients included in this study, they were colorectal cancer patients in the Digestive Surgery division at Dr. Hassan Sadikin Hospital. Examination of NRAS mutations was carried out by Polymerase Chain Reaction (PCR) from fresh tumour tissue obtained from surgery or colonoscopy. Meanwhile, HER2 examination used the Immunohistochemistry (IHC) method of paraffin blocks for anatomical pathology examination. **Result:** HER2 overexpression was found in 6/58 (10.3%) patients with CRC, and from 8 subjects with NRAS mutations, only 1 subject (1.7%) showed overexpression of HER2. Univariate analysis of HER2 expression showed no significant associations to age, sex, histologic feature, tumor location, and NRAS mutations. A significant association was found between HER2 expression and stadium of the CRC with $p=0.001$. **Conclusion:** There is no association between NRAS mutations and HER2 overexpression in colorectal cancer patients.

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