Mutational frequency of oncogenic *RAS* family genes in Bulgarian patients with different localization of colorectal cancer

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INTRODUCTION

Somatic mutations in oncogenic *RAS* gene family (*KRAS* and *NRAS*) are associated with resistance to anti-EGFR monoclonal antibodies in patients with colorectal cancer (CRC). However, the outcome depends on the localization of the tumor. *RAS*-wild-type right-sided colon cancer treated with anti-EGFR monoclonal antibodies is associated with poor prognosis compared to left-sided colon and rectal cancer.

AIM

The aim of the present study is to evaluate the frequency of *RAS* mutations in Bulgarian patients and their association with tumor localization.

MATERIALS AND METHODS

This study included 61 patients with CRC (28 female and 33 male). DNA was isolated from formalin-fixed paraffin-embedded (FFPE) tissue samples. Mutations in RAS were detected by commercial RT PCR kit.

RESULTS

Table 1. Grouping of CRC patients by localization of the cancer localization

TUMOR LOCALIZATION	NUMBER OF PATIENTS	%
LEFT COLON	27	44
RIGHT COLON	14	23
RECTUM	20	33

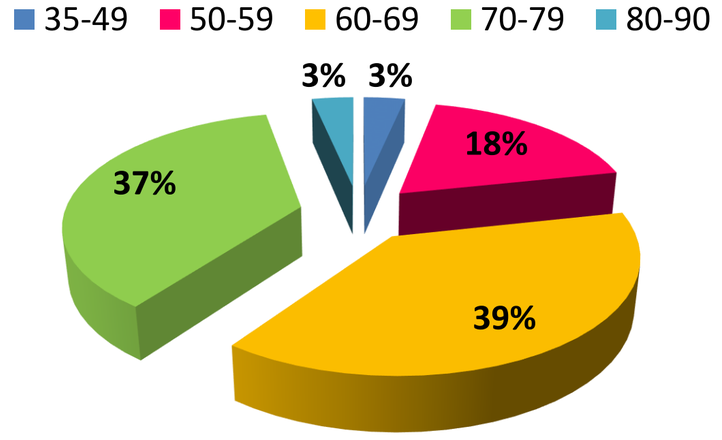

Fig.1 Grouping of CRC patients by age

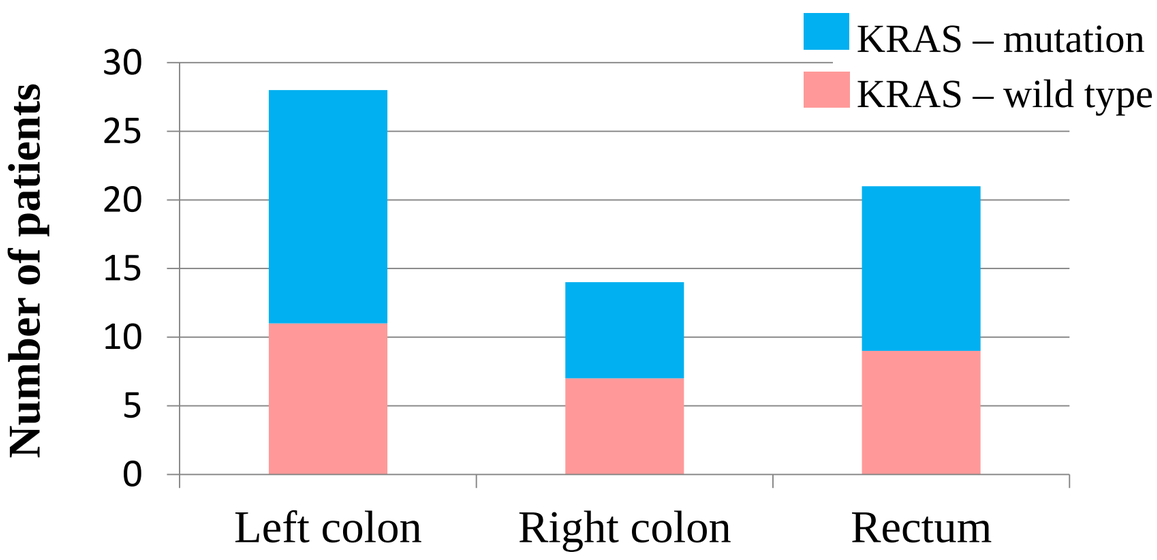

Fig. 2 KRAS mutational status and tumor localization in CRC patients

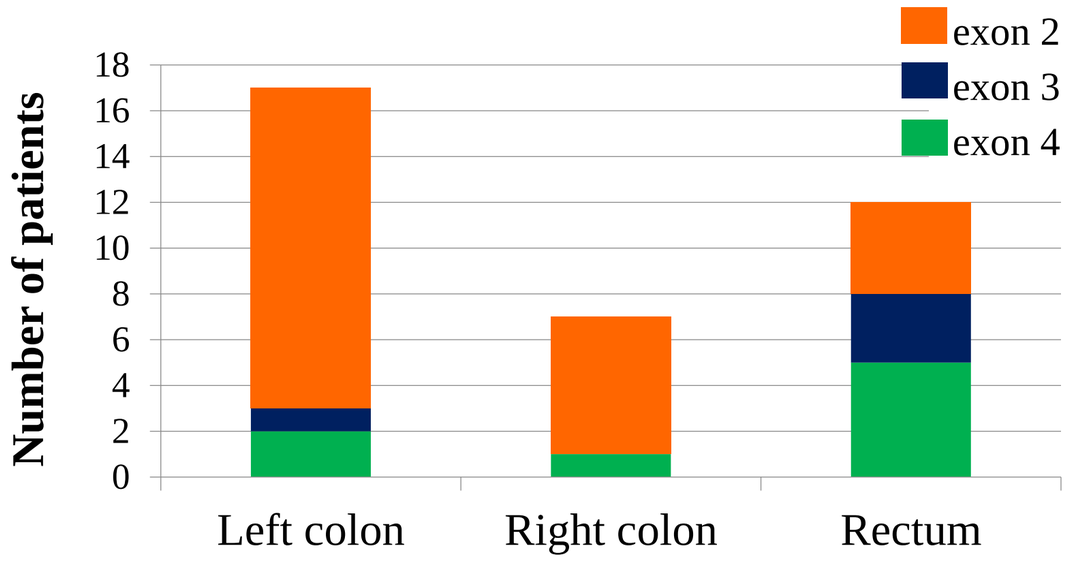

Fig. 3 Mutations in exon 2, exon 3 and exon 4 in *KRAS* gene in relation to tumor localization in CRC patients

CONCLUSIONS

Exon 4 *KRAS* mutations are identified in adenomas, but also in primary invasive colorectal tumors, suggesting that they occur early in the development of the disease. The clinical importance of the established associations for exon 4 *KRAS* mutations is the subject of our further work with a larger number of patients.