

**Characterization of the immune infiltrate present in early and late stage sporadic and hereditary neoplastic lesions of the colon**

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**Purpose of the study:** To determine whether immune infiltration of early and late stage neoplastic lesions varies in the context of sporadic and hereditary development of colorectal adenomas.

**Methods:** 14 patients with neoplastic lesions of the colon were selected from the tumour bank. Nine were familial adenomatous polyposis (FAP) patients and 5 were sporadic colorectal cancer (CRC) patients. Immunohistochemistry was performed for CD3+, CD4+, CD8+, CD57+, CD68+ and FoxP3+ to determine the density of infiltration of immune cells for each lesion (normal, low-grade dysplasia, high-grade dysplasia and adenocarcinoma) and location (stromal [s] or intratumoural [t]). The immune reactive positive lymphocytes were manually counted using Image J in an area of 1 mm<sup>2</sup> (4 images of high density spots at 400x magnification).

**Summary of results:** The frequency of CD8 lymphocytes in the stroma of normal tissue (p=0.039), CD68 cells in low-grade dysplasia (p=0.031), high-grade dysplasia (p=0.020) and adenocarcinoma (p=0.034) and FoxP3 lymphocytes in all lesions (normal p=0.011, low-grade dysplasia p=0.013, high-grade dysplasia p=0.019, adenocarcinoma p=0.034) were significantly higher in the sporadic patient group than in the FAP patient group. In all cases, in both patients groups, the amount of infiltrating immune cells was higher in the stroma (s) than in the tumour (t).

**Conclusions:** The data indicates a tendency towards a higher density of immune cells in sporadic CRC cases than FAP cases. CD8 T cells, macrophages and regulatory T cells (T-regs) may be important cells in determining differential activity of the immune system towards neoplastic lesions in the sporadic and FAP contexts. However, this finding needs to be validated in a larger sample size and using an alternative model.