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Molecular features of serrated colorectal polyps

Andrew Ruszkiewicz
SA Pathology, Australia

Until recently, colorectal cancer (CRC) has been viewed as relatively homogeneous disease despite recognition of various histological types of this disease. Over the last 25 years it has become clear that CRC evolves through multiple molecular pathways which have different precursors. About 30% of all CRCs develop through a serrated pathway in reference to crypt morphology in their precursor polyps termed sessile serrated adenomas/polyps (SSA/P). Distinguishing between early SSA/P and other colorectal polyps including innocuous hyperplastic polyps (HPs) is challenging and may not be possible in routine practice. We performed gene expression profiling (GEP) of serrated colorectal polyps and conventional adenomas and shown a significantly ($p<0.05$) higher expression of Cathepsin E in sessile serrated adenomas as compared to hyperplastic polyp and tubular adenomas. Trefoil Factor 1 showed the same trend of expression for sessile serrated adenomas as compared to hyperplastic polyps and was significantly higher in both polyps compared to tubular adenomas. More recently, our study conducted between hyperplastic polyps and SSA/P using GEP with qRT-PCR and immunohistochemistry validation identified Claudin 1 (*CLDN1*) as the most statistically significant differentially expressed gene in *BRAF V600E* mutant polyps regardless of histological subtype of serrated polyp type ($p<0.0005$). Our results demonstrated an apparent heterogeneity on the molecular level within the HPs group and suggest that HPs with somatic *BRAF V600E* mutation and up-regulated expression of *CLDN1* are closely related to SSA/P and may in fact represent a continuous spectrum of the same neoplastic process within the serrated pathway of colorectal carcinogenesis.

Biography

Andrew Ruszkiewicz was the Fellow of the Royal College of Pathologists of Australasia (RCPA) in 1998. He is a Senior Consultant Pathologist at SA Pathology, Head of Gastroenterology Research Laboratory, Associate Professor, School of Medicine, University of Adelaide and School of Pharmacy and Medical Science, University of South Australia. He has a special interest in the gastroenterology pathology, particularly in the precursor lesions and malignancies of the colorectum, esophagus and pancreas. He is the Co-Founder of Colorectal Cancer Tissue Bank which holds samples of colorectal cancers, polyps, normal tissues and blood from patients with colorectal malignancies. He is also an Examiner for the RCPA.

Andrew.Ruszkiewicz@sa.gov.au

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