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Summary

RECTAL CHROMATIN NANO-ARCHITECTURE AND MICRORNAS AS A MARKER OF FIELD CARCINOGENESIS: IMPLICATIONS FOR RISK STRATIFICATION FOR COLORECTAL CANCER SCREENING

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Colorectal

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A study combining chromatin nano-architecture analysis via partial wave spectroscopic microscopy with microRNA markers from rectal biopsies demonstrated high diagnostic performance (AUC 0.90, sensitivity 0.88, specificity 0.85) for identifying patients with advanced adenomas elsewhere in the colon.

KEY POINTS

- Chromatin fractal dimension (D) measured by partial wave spectroscopic microscopy from rectal biopsies showed AUC 0.85 for detecting advanced adenomas with sensitivity 0.74 and specificity 0.83 in a study of 104 controls and 53 advanced adenoma patients
- Four microRNAs (miR137, miR92a, miR-135b-5p, miR361-5p) showed elevated expression in patients with advanced adenomas, with fold changes ranging from 2.01 to 174 in a pilot study of 20 patients
- Combining the chromatin marker D with miR-92a and miR-135b-5p increased diagnostic performance synergistically to AUC 0.90 with sensitivity 0.88 and specificity 0.85
- The approach leverages field carcinogenesis, using endoscopically normal rectal mucosa to predict neoplastic risk elsewhere in the colon as a potential colonoscopy risk-stratification tool
- Study authors have financial interests in Nanocytomics LLC, which commercializes the partial wave spectroscopic microscopy technology used in this research

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