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Summary

WHAT FACTORS ARE ASSOCIATED WITH THE OPTICAL DIAGNOSIS OF POLYDEEP, A COMPUTER-AIDED DIAGNOSIS SYSTEM (CADE/X)? IN VITRO ANALYSIS

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Colorectal

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Study of 5546 polyp images identifies morphological, histological, and image characteristics associated with PolyDeep CADe/x system performance in predicting colorectal polyp histology.

KEY POINTS

- PolyDeep correctly classified 85.02% of evaluated polyps overall, with performance varying by histology type: 92.8% for adenomas, 82.5% for TSA, 84.2% for SSL, and 51.6% for hyperplastic polyps.
- Hyperplastic polyps showed the highest misclassification risk with OR 15.67, followed by SSL (OR 2.52) and TSA (OR 1.88), compared to adenomas.
- Multiple regression models (R^2 0.3655, AIC 3363.3 for neoplastic classification; AIC 3547.5 for misclassification) identified polyp size, NICE classification, and RGB/HSV color model parameters as significantly associated with classification accuracy.
- Analysis of 5546 still images from PIBAdb database used three statistical approaches to determine which factors predict PolyDeep's ability to distinguish neoplastic from non-neoplastic lesions.
- Findings may inform strategies to improve CADe/x histology prediction performance, particularly for challenging polyp subtypes with lower accuracy rates.

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