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Summary

MACHINE LEARNING TOOLS PREDICT EOSINOPHILIC ESOPHAGITIS IN ADULTS REPORTING DYSPHAGIA: DEVELOPMENT, EXTERNAL VALIDATION, AND SOFTWARE CREATION FOR POINT-OF-CARE USE

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Two machine learning models were developed and externally validated to predict eosinophilic esophagitis in patients with dysphagia, using either clinical data alone or combined clinical-endoscopic data before biopsy results are available.

KEY POINTS

- The clinical-endoscopic model achieved AUC 0.93 with 88% sensitivity and 95% specificity in an independent external validation cohort of 93 patients, with age at diagnosis, esophageal rings, and sex showing highest predictive ability.
- The clinical data-only model achieved AUC 0.82 with 75% sensitivity and 82% specificity in external validation, with age at diagnosis and sex as top predictors.
- Models were developed on 273 EoE and 55 non-EoE dysphagia patients from London and validated prospectively across three European tertiary referral centers (London, Pisa, Padua).
- The authors propose that their freely available point-of-care software may support clinical decision-making regarding when to perform or repeat endoscopy with biopsies and potentially avoid unnecessary biopsies in very low-risk patients.
- This material is most relevant to gastroenterologists evaluating patients with dysphagia and considering diagnostic strategies for eosinophilic esophagitis.

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