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Construction of A Screening Platform for the Dominant Population of Neoadjuvant Immunotherapy for Esophageal Cancer Based on Radiomics Technology and Tumour Immune Microenvironment

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ABSTRACT This review aimed to evaluate the potential of combining radiomics with tumour immune microenvironment assessment to identify patients with esophageal cancer who are most likely to benefit from neoadjuvant immunotherapy. Relevant literature on radiomics, immune biomarkers, and neoadjuvant treatment was reviewed and synthesised. Radiomics can extract quantitative imaging features that reflect tumour heterogeneity and may be associated with immune characteristics such as programmed death-ligand 1 expression and cluster of differentiation 8 (CD8)-positive tumour-infiltrating lymphocytes. Tumour immune microenvironment assessment provides biologically relevant information but is limited by invasiveness, sampling bias, cost, and technical complexity. Integrating noninvasive radiomic features with immune markers may improve patient stratification, treatment selection, and response prediction. However, evidence in esophageal cancer remains limited, and standardised multicentre validation is required before clinical implementation. This integrated strategy may support the development of a practical precision-medicine screening platform for neoadjuvant immunotherapy.