



RESEARCH TOPIC CL124

A multidimensional diagnostic framework for the prediction of risk in early esophageal adenocarcinoma

Research area

Surgical Area

Clinical Unit name

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Abstract

The incidence of esophageal adenocarcinoma (EAC) has surged significantly over the past decades, leading to a higher detection rate of early-stage lesions. The management of these patients remains a clinical challenge, centered on the delicate balance between organ-preserving endoscopic resection and radical esophagectomy. This decision-making process hinges on the accurate prediction of aggressiveness of the disease and lymph-node metastasis risk, which remains the primary determinant of long-term prognosis.

Current staging modalities, frequently lack the resolution to detect microscopic nodal involvement, leading to significant rates of clinical understaging and inappropriate treatment selection. Recent evidence suggests that early EAC is biologically heterogeneous, and metastatic competence is often driven by molecular programs and micro-architectural signatures that are not captured by conventional visual inspection.

The present research project aims to develop a multidimensional predictive framework to decode the biological metastatic potential of early EAC. By integrating advanced computational analysis of optical and histological imaging with the evaluation of systemic molecular biomarkers, the study seeks to identify high-risk biological lineages from inception. This approach intends to transcend the limitations of current morphologic staging, providing a standardized and objective risk score.

The ultimate goal is to personalize the therapeutic pathway: identifying node-negative candidates for safe organ preservation while selecting high-risk patients who may benefit from immediate surgical escalation or neoadjuvant systemic therapy. This paradigm shift aims to improve survival outcomes and reduce the morbidity associated with unnecessary radical interventions in the era of precision oncology.

Scientific references

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Type of contract

Scholarship or coordinated and continuous collaboration contract (Co.Co.Co.) amounting to at least € 35,000 gross per year, activated by Fondazione Humanitas per la Ricerca ETS. The amount is subject to IRPEF taxation and to autonomous and full payment of social security and welfare contributions by the collaborator, directly to the relevant professional pension fund or to any other fund of their choice.



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