



RESEARCH TOPIC CLI13

Advanced MRI techniques for the characterization of neuroendocrine neoplasms: identifying imaging signatures for pancreatic, siNETs, prostate NETs, head and neck and soft tissues NETs

Research Area

Services Area

Clinical Unit name

Cardiovascular Imaging

Supervisor

Marco Francone marco.francone@hunimed.eu

Abstract

Several pathologic parameters exist for the classification and grading of neuroendocrine neoplasms, but disease aggressiveness and evolution remain difficult to predict; moreover, treatment strategies remain non-disease specific for many bodily districts. The present PhD programme aims to investigate the signatures of neuroendocrine neoplasms arising in different sites -pancreas, small intestine, prostate, head and neck, soft tissues- by means of advanced MRI techniques, and correlate these with disease phenotype. Clinical activities will include quantitative MR imaging analysis, identification of imaging biomarkers predictive of tumor mitotic index, Ki67 and degree of differentiation. Imaging characterization will aim at studying the heterogeneity of metastases, the follow-up changes and response to different therapeutic agents. Interventional techniques for the treatment of metastatic disease will also be investigated, along with post-treatment changes.

Scientific references

1. Segaran, N., Devine, C., Wang, M., Ganeshan, D. "Current update on imaging for pancreatic neuroendocrine neoplasms." *World J Clin Oncol*. 2021; 12(10): 897-911. DOI: <https://dx.doi.org/10.5306/wjco.v12.i10.897>
2. Oberndorfer, S., et al. "Advances in the imaging of gastroenteropancreatic neuroendocrine neoplasms." *World J Gastroenterol*. 2019; 25(5): 516-528. DOI: <https://dx.doi.org/10.3748/wjg.v25.i5.516>
3. Hope, T.A., et al. "Imaging of neuroendocrine tumors: spectrum of appearances on ct, mri, and octreotide scans and correlation with the clinical presentation." *Radiographics*. 2023; 43(1): E1-E20. DOI: <https://dx.doi.org/10.1148/rg.2023220132>
4. Yang, M., et al. "Multiparametric MRI in the diagnosis of neuroendocrine neoplasms of the pancreas." *Abdom Radiol (NY)*. 2022; 47(3): 813-827. DOI: <https://dx.doi.org/10.1007/s00261-021-03179-3>
5. Dromain, C., et al. "MRI for the diagnosis of malignancy in lesions classified as indeterminate by CT in patients with neuroendocrine tumors." *J Magn Reson Imaging*. 2020; 52(6): 1810-1819. DOI: <https://dx.doi.org/10.1002/jmri.27263>



6. Sundin, A., et al. "ENETS Consensus Guidelines for the Standards of Care in Neuroendocrine Tumors: Radiological, Nuclear Medicine & Hybrid Imaging." *Neuroendocrinology*. 2017; 105(3): 212-244. DOI: <https://dx.doi.org/10.1159/000475526>
7. Pavel, M., et al. "Gastroenteropancreatic neuroendocrine neoplasms: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up." *Ann Oncol*. 2020; 31(7): 844-860. DOI: <https://dx.doi.org/10.1016/j.annonc.2020.03.304>

Type of contract

PhD scholarship of € 22.400 gross per year awarded by Humanitas University. This sum is exempt from IRPEF income tax according to the provisions of art. 4 of Law no. 476 of 13th August 1984, and is subject to social security contributions according to the provisions of art. 2, section 26 and subsequent sections, of Law no. 335 of 8th August 1995 and subsequent modifications.

Borsa di dottorato pari a € 22.400 annui lordi erogata da Humanitas University. Importo non soggetto a tassazione IRPEF a norma dell'art. 4 della L. 13 agosto 1984 n. 476 e soggetto, in materia previdenziale, alle norme di cui all'art. 2, commi 26 e segg., della L. 8 agosto 1995, n. 335 e successive modificazioni.