Prognostic impact of phenotype heterogeneity of grade 1-2 metastatic gastroenteropancreatic neuroendocrine tumors documented by 18FDG PET-CT and 68Ga-DOTANOC PET-CT

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usually is not connected to the real profile of somatostatin receptors expression in the tumor tissues. ***Materials and Methods:*** Case report: In 03.2009 a 34-years old male was referred to Endocrinology Clinic with suspicion of pancreatic NET. MRI revealed presence of a 54x42mm tumor of the distal part of the pancreas and 2 metastatic changes in the liver. Liver biopsy confirmed neuroendocrine neoplasm. Resection of the pancreatic body and tail with splenectomy was performed on 04.2009(pathology: neuroendocrine cancer, Ki67 50%, metastases in 17/20 nodes). The tumor had good expression of somatostatin receptors (sstr) in the primary and metastatic lesions.Due to the high expression of sstr, patient received 1 dose of PRRT with the next Gemzar and Erlotinib therapy which was ended in 08.2011. From 2015, the PET/CT scan with 68GaDOTA-TATE show pathological (Krenning score 3 and 4) expression of sstr in the retropharyngeal node. The lesion had slowly progressed in various follow-up studies. In 09.2016, the conglomerate of neck nodes group II and V, the submandibular salivary gland and the node of the mandible angle were removed (metastases to lymph nodes were confirmed, Ki67 3%). The follow-up PET/CT studies with 68Ga DOTA-TATE started from 11.2016 showed the persistent pre-vertebral SSTR+ space infiltration extending from the base of the skull to level C1/C2 and involvement of cervical IIa nodes. A follow-up study with 68Ga DOTA-TOC showed only slightly elevated (Krenning score 1) expression of sstr in the pre-vertebral space (previously with high pathological expression of sstr seen on 68GaDOTA-TATE PET/CT). The next follow-up study with 68GaDOTA TATE again revealed high, pathological expression of sstr in the neck area. ***Results:*** Patient with pancreatic NETG3 was found to have incompatible imaging results using both 68Ga-TOC and -TATE ligands. ***Conclusion:*** The result of PET/CT 68Ga-somatostatin analogue imaging with different ligands may give different results in the same patient and in extreme cases may lead to the suboptimal choice of therapeutic procedures (disqualification from long-acting somatostatin analogue treatment and PRRT in case of dissemination of the disease). ***References:*** None

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Aim/Introduction: The identification of prognostic factors for survival in patients with metastatic gastroenteropancreatic neuroendocrine tumors (GEP-NET) represents a challenge for patient management. This retrospective study investigated the phenotype presentation of these tumors with 18FDG and 68Ga-DOTANOC-PET-CT and analyzed its prognostic impact on survival. ***Materials and Methods:*** Patients with metastatic histologically proven grade 1 (G1) or 2 (G2) GEP-NET (WHO 2019 classification), who underwent 18FDG-PET-CT and 68Ga-DOTANOC-PET-CT within 2 months between 2013 and 2017, were included. For 18FDG-PET-CT analysis, pathological foci which exceeded in intensity healthy liver were considered significant. Progression was assessed with clinical and radiological criteria. Progression free survival (PFS) and overall survival (OS) were evaluated. Kaplan-Meier method was used (curves being compared with log-rank test). Prognostic factors were evaluated with univariate and multivariate analysis (Cox proportional hazards model), with a p value of less than 0.05 considered significant. ***Results:*** A total of 39 patients (23 males, 16 females, median age: 59 years), 10 with G1 (26%) and 29 with G2 (74%) tumors were included, mainly pancreatic (n=20; 51%) or midgut (n=13; 33%) origin. Median Ki67 index was 7%, >10% in 11 patients (28%). 68Ga-DOTANOC-PET-CT was positive (at least one lesion) in 100% of patients and 18FDG-PET-CT in 72% of patients (n=28). At least one 18FDG+/68Ga-DOTANOC- lesion was found in 4 patients (10%). After a median follow-up of 39 months, 24 patients had progressive disease (64%) and 11 died (28%). PFS was significantly lower in 18FDG-PET-CT positive patients than in 18FDG-PET-CT negative patients (14vs55.9 months; p=0.0249). Furthermore, the number of 18FDG positive lesions and the presence of at least one 18FDG+/68Ga-DOTANOC- lesion were significantly correlated with PFS in univariate (respectively, p<0.0001 and p=0.007) and multivariate analysis (respectively p=0.0012 and p=0.020). Despite the low number of event, the presence of at least one 18FDG+/68Ga-DOTANOC- lesion was associated with poor OS (p=0.017). The number of previous treatment was associated with PFS in univariate analysis (p=0.0396) but not in multivariate analysis. None of the other clinical, biological (including WHO grade, Ki67 index) or 68Ga-DOTANOC-PET-CT data were significantly associated with PFS or OS. ***Conclusion:*** Our results showed the high prevalence of 18FDG positive lesions in G1 and G2 metastatic GEP-NET illustrating the heterogeneity of these tumors and confirmed the prognostic impact of 18FDG-PET-CT on PFS. In particular, the number of 18FDG positive lesions and the presence of at least one 18FDG+/68Ga-DOTANOC- lesion were associated with a poorer prognosis in our patients. ***References:*** None