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EVALUATION AT EACH CYCLE WITH 68GA-DOTATOC-PET/CT IN ADVANCED NEUROENDOCRINE TUMOURS TREATED WITH PRRT

V. De Biasi[3], M. Casali[3], A. Filice[3], F. Fioroni[2], M. Iori[3], A. Tartaglione[3], A. Frasoldati[1], A. Versari[3]
[1]*Endocrinology, Arcispedale Santa Maria Nuova - IRCCS, Reggio Emilia, Italy*
[2]*Medical Physics Units, Arcispedale Santa Maria Nuova - IRCCS, Reggio Emilia, Italy*
[3]*Nuclear Medicine, Arcispedale Santa Maria Nuova - IRCCS, Reggio Emilia, Italy*

BACKGROUND-AIM

Somatostatin receptors are over-expressed in most neuroendocrine tumors and other neoplasms. Radiolabelled somatostatin analogs can be used for imaging and Peptide Receptor Radionuclide Therapy (PRRT) in these neoplasms. In this prospective study, we analyzed response 3 months and 1 year after the last PRRT cycle, evaluated with 68Ga-DOTATOC-PET/CT (PET) after each therapy cycle to determine the best timing to predict patient outcome.

METHODS

Twenty-one patients (pts, 8 male, 13 female) with advanced somatostatin-receptor-positive tumors were treated with 90Y/177Lu-DOTATOC in 2007-2010 (a total of 112 sessions) and underwent PET in 2007-2014 after each therapy session (at least 45 days after) and in follow up. We have considered a total of 98 lesions.
For each lesion were analyzed 2 parameters: functional volume and SUV max. These parameters were compared with baseline PET. For each parameter was analyzed trend by curve representation. The analysis was performed by "PETvCAR AW Volumeshare 2" software (General Electric) for a total of 144 PET.

RESULTS

At 3 months after PRRT (end therapy response), 7 pts (33%) had a partial response (PR), 12 (57%) stable disease (SD) to treatment and 2 (9%) progression disease (PD).
After the first cycle of therapy in only 5 (24%) pts PET correlates with end therapy response while PET performed after the second and third cycle, respectively, in 52% and in 57% of pts.
Outcome, assessed one year after the end of PRRT, was PR in 7 patients (33%), SD in 8 (38%) and PD in 6 (28%) with a correlation after the first cycle PET of 38% of the pts, 48% in the second and 48% after the third.
The comparison between end therapy response and outcome shows: PD pts at the end of therapy (18%) were in PD at 1 year. Only 4 pts (18%) with a positive response at three months (PR + SD) then developed a relapse of disease (PD). 15 (78%) pts with a positive response to three months (PR + SD) keep this response at one year.
The clinical response resulted higher than biochemical and PET findings. The response to PRRT was better in liver metastases than in other tissues (lymph node, lung and bone).

CONCLUSION

PET performed after the second or third cycle of therapy may offers a good information about end therapy response and patients outcome in PRRT. Therefore PET after second cycle (rather than third) can be used to get prognostic information as soon as possible. The correlation between end therapy response and outcome therapy is very good with 78% of pts that keeps the positive response and do not have disease relapse.