Cancer treatment could target inflammation in CVD

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Peptide receptor radionuclide therapy (PRRT) with radiolabeled somatostatin analogs, an established treatment for cancer patients, could offer a novel therapeutic approach to decrease levels of inflammation in the atherosclerotic plaques of patients with cardiovascular disease (CVD), reported an abstract[1] study at the International Conference on Nuclear Cardiology and Cardiac CT, May 5 to 8 in Berlin, Germany.

"Our results should act as a stimulus for further exploration of radionuclide based interventions in atherosclerosis. Ultimately such therapies might be used to lower the degree of inflammation in atherosclerosis which has the potential to reduce the occurrence of heart attacks," said Imke Schatka, the first author of the study from the Department of Nuclear Medicine at Hannover Medical School, Germany.

PRRT is a technique currently used to treat patients with metastatic neuroendocrine tumours (NETS), a diverse group of malignancies deriving from the neuroendocrine cell system (the most frequent locations being pancreas, small intestine and lung).

The discovery of over expression of somatostatin receptors (SSTR) on NET tumours first opened the way for development of radiolabelled somatostatin analogs to image tumours during PET/CT scans. DOTATATE is a somatostatin receptor (SSTR) ligand targeting SSTR-2, a receptor known to be expressed on 70% of NET tumours. Once tumours have been visualized, it is possible to target therapy by attaching

the beta-emitter ^{177} Lutetium (^{177}Lu) to the ligand.

Active inflammation has been widely implicated in the initiation, progression and disruption of vulnerable plaques, and consequently offers an emerging target for the imaging and treatment of atherosclerosis. "Since SSTR-2 receptors are also expressed on macrophages we speculated that DOTATATE-PET/CT might be used to detect vulnerable plaques and that a PRRT procedure could reduce inflammation in the arterial wall," explained Schatka.

For the current study, 11 patients (from a group of 165 undergoing PRRT for NET tumours) were retrospectively identified because they met the criteria of only receiving the beta emitter^{177}Lu treatment after undergoing two consecutive scans, with a third scan following treatment.

For each of the three scans, vessel wall uptake of the DOTATATE ligand was measured in six arterial segments of PET images (carotid, aortic arch, ascending, descending, abdominal aorta, and iliac arteries) and then the overall vessel uptake was determined for each individual patient.

Results showed that for the first scan the overall vessel uptake of the ligand correlated with the age of the patient (P