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Application of iodine map, monoenergetic 40-keV and cinematic rendering in the diagnosis of pancreas diseases

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Background: The use of dual energy computed tomography (DECT), that is the emission of two different incidence of kilo voltage, enables post-processing techniques, among them the 40-keV mono-energetic and iodine map, which allow the evaluation of contrast enhancement with maps colored, aiding in the differential diagnosis of hypo and hyper vascular pancreas lesions.

History: A 67 years-old male patient, 66 kilograms, presenting lack of appetite and weight loss in the last two months and no previous cancer. Patient with suspected pancreatic lesions was submitted to Computed Tomography Dual Energy (CTDE) and the iodine map, mono-energetic 40keV and cinematic rendering post-processing were performed.

Diagnosis: Pancreas head injury was also visualized on PET-CT and confirmed as squamous cell carcinoma with biopsy. In the iodine map, we can observe with greater definition the lesion with the attenuation of the amount of iodine, which is even more evident in mono-energetic 40 keV and we visualize it texturally by cinematic rendering. Quantitative analysis revealed increased Iodine enhancement (carcinoma: 5.0 mg/ml; 76.8% versus normal tissue: 2.9 mg/ml; 44.7%), as well as Fat Fraction (carcinoma: 18.3% versus normal tissue: 8.9%) and greater standard deviation, what may represent greater heterogeneity of analyzed tissue when compared to the normal tissue.

Conclusions: Additional techniques to abdominal DECT may help in the visualization of lesions difficult to diagnose, adding qualitative and quantitative information, leading to a differential diagnosis of the lesions.

Biography

Pamela Bertolazzi is a Biomedical Scientist. She has completed her Graduation in 2011 and has worked with diagnostic imaging at Sirio Libanes Hospital for seven years. Currently, she is working as a Sr. Clinical Application Specialist at Siemens Healthineers. During her time at Hospital, she was invited to teach in the first Biomedical Residence Program in Brazil. She is a PhD student with a project focused on cerebral changes of obese children in University of Sao Paulo. Her work has a great repercussion around the world and she hopes that her work will help people in the near future.

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