Editorial

Dual-Energy Computed Tomography Applications in the Abdomen

Rochita Venkataramanan1 Venkatesh Kasi Arunachalam2

1 Department of Radiology, Advantage Imaging and Research, Chennai, Tamil Nadu, India
2 Department of Radiology, Kovai Medical Center and Hospital, Coimbatore, India

J Gastrointestinal Abdominal Radiol ISGAR 2022;5:75.

Among the recent developments in computed tomography (CT), dual-energy CT (DECT) is one of the most important recent advances. The challenges with single-energy CT (SECT) acquisition are tissue characterization and lesion differentiation. In SECT, the two different elements with the same attenuation depict a similar Hounsfield unit. DECT can overcome this challenge. In DECT, tissues are imaged with two energy levels. The attenuation response to both energy levels is used to characterize the tissues further. This issue especially deals with the applications of DECT in abdominal imaging.

In the first article, Alavandar et al1 have discussed the basic principles and available hardware in DECT. In the second article, Narappulan et al2 have analyzed the role of virtual monoenergetic imaging, one of the essential image sets generated from dual-energy source images. They discuss its role in evaluating hypervascular focal lesions in the liver. In the following article, Marri and Madhusudhan3 have explained the role of DECT in the evaluation of diffuse liver diseases like fat/iron deposition and fibrosis. In the subsequent article, Singh et al4 have discussed the use of DECT in evaluating gall bladder pathologies. Further in the issue, Mroueh et al5 have explained the role of DECT in pancreas imaging with applications in pathologies like pancreatitis, trauma, and pancreatic neoplasms. In the following article by Mehra,6 DECT role in urolithiasis has been discussed extensively.

Lastly, in the article by Tripathy et al,7 DECT applications in abdominal interventions are discussed. The role of calcium and bone subtraction images in evaluating vessels in atherosclerotic diseases and virtual noncontrast images/iodine maps in evaluating residual tumors following locoregional treatment of HCC is explained very well in this article. This article also analyzes the evaluation of endoleaks in low monoenergetic images and metal artifacts reduction in high monoenergetic data sets.

We wish our readers an enjoyable and highly informative reading.

Conflict of Interest
None declared.

References
1 Alavandar E, Arunachalam VK, Narappulan N, et al. Principles and available hardware in DECT. J Gastrointestinal Abdominal Radiol ISGAR 2022;5:76–84
3 Marri UK, Madhusudhan KS. Dual-energy computed tomography in diffuse liver diseases. J Gastrointestinal Abdominal Radiol ISGAR 2022;5:94–106
4 Singh T, Gupta P. Role of dual-energy computed tomography in gallbladder disease: a review. J Gastrointestinal Abdominal Radiol ISGAR 2022;5:107–113
5 Mroueh N, Cao J, Kambadakone A. Dual-energy CT in the pancreas. J Gastrointestinal Abdominal Radiol ISGAR 2022;5:114–120
6 Mehra S. Role of dual-energy computed tomography in urolithiasis. J Gastrointestinal Abdominal Radiol ISGAR 2022;5:121–126