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LETTER TO THE EDITOR

Dual-energy CT in colorectal cancers: beyond the density measurements

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I read with interest the article by Özdeniz et al. (1), on dual-source dual-energy computed tomography (DECT) to differentiate fecal matter from neoplasm. The study was well done and was based on density measurements in iodine maps and virtual unenhanced images. I would like to add a few points to the discussion. The main advantage of DECT is material decomposition and the relative iodine concentration can be measured in the iodine map images (2, 3). This is more objective compared with the visual analysis. In true mass lesions, because of iodine uptake, the relative iodine quantification (using region of interest) shows positive value (> 1 mg/mL). In our example (Fig.), patient had a tumor in the descending colon, which showed increased iodine concentration (>1 mg/mL). However, fecal matter or bowel contents do not show increased iodine concentration.

One of the limitations in this study was the small field of view (FOV), as the study was done using first generation dual-source DECT scanner. In second-generation (SOMATOM Definition Flash, Siemens Healthcare) and third-generation (SOMATOM Force, Siemens Healthcare) scanners (4), the FOV is 33 cm (Fig. c) and 35.6 cm, respectively (4). The third-generation scanner is sufficient for most small-sized patients. The limitation of FOV is not present in single-source DECT scanners. A summary of comparison between different DECT scanners is provided in the Table.

Table. Types of DECT scanners available in the market

	Dual source DECT	Rapid voltage switching DECT	Dual detector layer DECT	Dual spin technology DECT
Vendor	Siemens (Siemens Healthcare)	GE (GE Healthcare)	Philips (Philips Healthcare)	Toshiba (Toshiba Medical Systems Corporation)
FOV	Limited due to the FOV of the second tube/ 26 cm – first generation. 33 cm - second generation 35.6 cm – third generation	50 cm	50 cm	50 cm
Dual energy mode (prospective selection needed)	Yes	Yes	No	Yes
Temporal registration	<70 milliseconds (misregistration artifacts possible)	0.2 milliseconds (misregistration artifacts unlikely)	The alignment is perfect	Misregistration artifacts possible
Tube current	Adaptive	Not adaptive	Not adaptive	Adaptive
Material decomposition	Image based	Based on projected data	Based on projected data	Image based (spiral mode scan)
Cross scatter	Possible because of 2 tubes	No	No	No
True conventional images (single energy images)	Cannot be simultaneously obtained	Cannot be obtained	Can be obtained	Cannot be obtained

DECT, dual energy computed tomography; GE, General Electric; FOV, field of view.

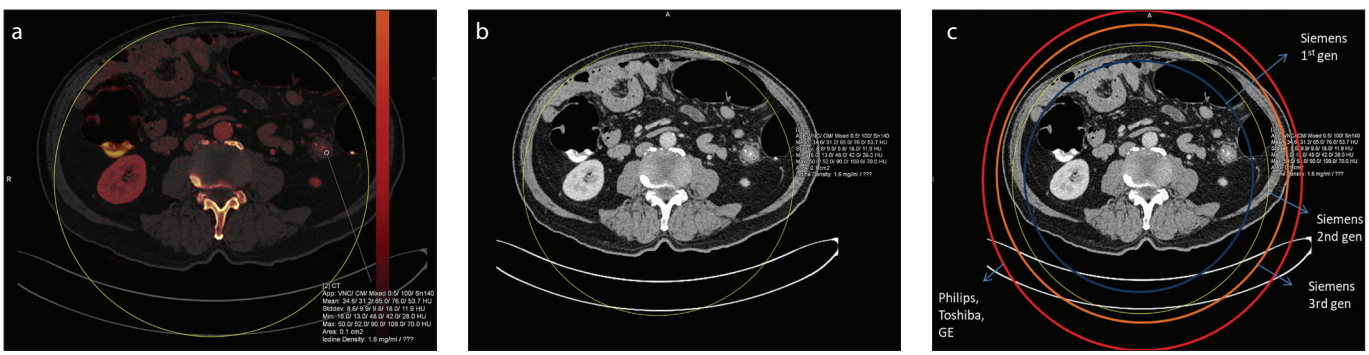

Figure. a–c. Iodine map **(a)** and contrast-enhanced portal-venous phase **(b)** images show descending colon tumor with increased iodine concentration. The scan was done using second-generation dual-source DECT with width of second detector around 33 cm. Panel **(c)** shows the FOVs of various DECT scanners.

Conflict of interest disclosure

The author declared no conflicts of interest.

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