



PHILIPS

Computed tomography

Case studies

Enhance diagnostic capabilities through **more complete assessment** with IQon Spectral CT

The detection, characterization, and assessment of tumors in follow-up exams is a common practice in a radiology setting. CT is often used for detection and follow-up assessment of lesions because of its speed and image quality. Detection of lesions (head and neck, liver, kidney) usually requires identification and differentiation of tumor tissue from the surrounding organ tissue. Iodinated contrast is often used to assist in improving the conspicuity of the lesions.

Spectral results including MonoE and iodine-based images can aid detection, characterization, and follow-up assessment of lesions by improving the contrast of the tumor as compared to the surrounding tissues. Spectral results, which are available 100% of the time for every patient scanned on the IQon, also allow the user to extract functional information of the tumor by quantifying iodine in tumor tissue.

The IQon Spectral CT delivers multiple layers of retrospective data in a single, low-dose scan. The following oncology case studies demonstrate clinical utility of the IQon Spectral CT in a radiology setting.

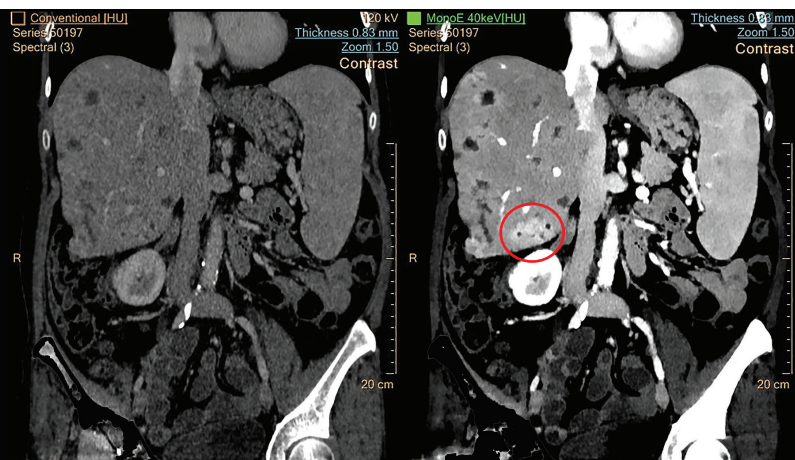
Case study 1

University of Cologne
Cologne, Germany

A middle-aged patient with a history of breast cancer undergoing chemotherapy and four cycles of TACE (trans-arterial chemoembolization) with primarily good tumor de-vascularization in the context of disseminated liver metastases. Recurrent liver metastases were observed on the follow-up scan. These hyper-vascular lesions (e.g. in liver segment 6) were very difficult to identify on a conventional scan, but are clearly visible on the low MonoE 40keV spectral results.

Scan data

CTDI = 10.2 mGy • DLP = 703.2 mGy*cm • mSv = 10.5



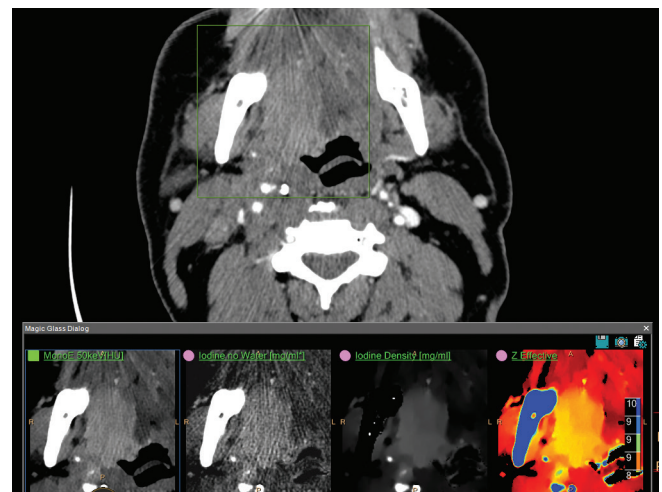
The hyper-vascular lesions that are very difficult to identify on a conventional scan are clearly visible on the low MonoE 40keV spectral results.

Case study 2

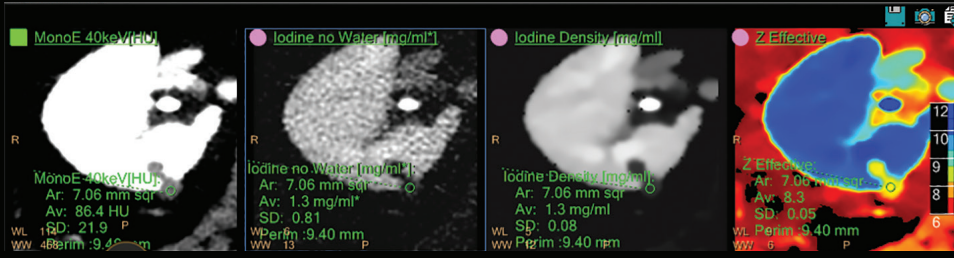
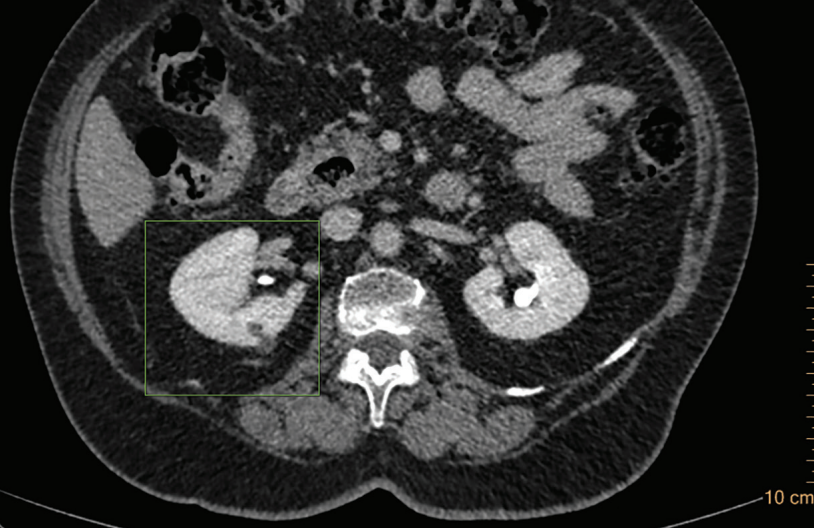
CARTI Cancer Center
Little Rock, Arkansas, USA

Patient undergoing treatment for head and neck cancer. A tumor at the base of the tongue on the right side was difficult to detect using conventional images only. However, radiologists then turned on spectral results and the tumor was clearly visible on the low MonoE and iodine-based spectral images.

Scan data CTDI = 9.1 mGy • DLP = 200.2 mGy*cm • mSv = 1.2



A tumor at the base of the tongue on the right side that was difficult to detect using only conventional images was clearly visible on the low MonoE and iodine-based spectral images.



Scan data
CTDI = 7.1 mGy
DLP = 193.8 mGy*cm
mSv = 0.1

While characterization was difficult on conventional images because of similar Hounsfield Units across different phases, spectral results confirmed the kidney lesion.

Case study 3

Cliniques universitaires Saint-Luc UCL
 Brussels, Belgium

An elderly patient was referred to UCL from another hospital for a second opinion of a suspicious lesion in the right kidney. A multi-phase scan protocol included a non-enhanced CT, 60 second and 180 second post-injection phases. It was difficult to characterize whether it was a lesion or a cyst on conventional images because of similar Hounsfield Units across different phases. Because the patient was scanned on the IQon Spectral CT, which provides conventional and spectral data 100% of the time in a single scan, spectral data was also available for this case review. Spectral results confirmed the increased enhancement on the kidney lesion, as well as increased iodine uptake in the delayed scan. A follow-up CT scan was scheduled to confirm the diagnosis based on the increased suspicion from spectral results.

Conclusion

Spectral CT data has the ability to add additional clinical value for detection, characterization, and follow-up assessment of oncology lesions. The ability to use low MonoE and iodine-based spectral results can help in differentiation of lesions from the surrounding tissue and also allows for quantitative measurement.

Clinical relevance

In oncology patients, the Philips IQon Spectral CT system can enhance diagnostic confidence by allowing complete (morphological and functional) assessment of lesions.

