PHILIPS

Clinical Elements

Making a More Informed Imaging Decision

PURPOSE OF STUDY

To evaluate the benefit and clinical significance that spectral detector CT results add to the diagnosis of routine conventional CT data. The following is a summary of the case study abstract published for RSNA 2014.

Overview

To achieve diagnostic certainty, physicians often have to decide ahead of time whether or not a patient should receive a dual energy scan. Many times when patients are scanned, incidental findings are revealed on the resulting CT scans. But with the Philips IQon Spectral CT, spectral is always on, and therefore provides the ability to retrospectively reconstruct CT data when incidental findings or inconclusive results are discovered.

In this case study, radiologists sought to answer the following questions:

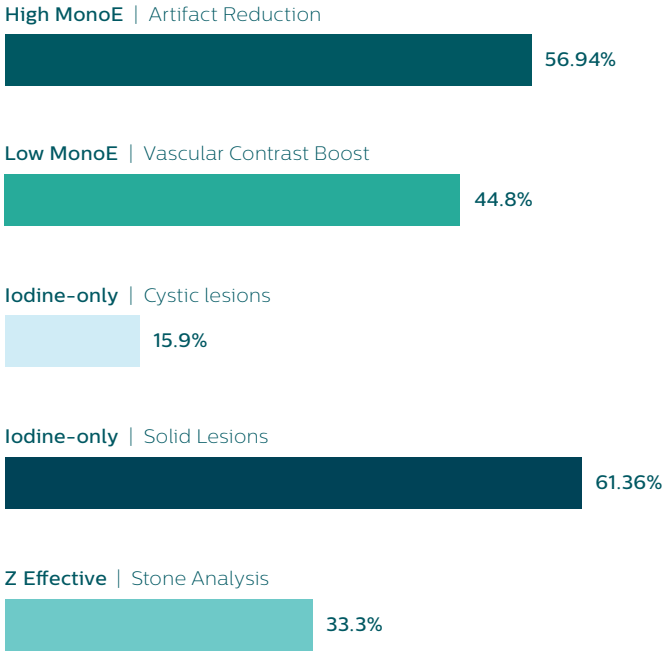
- In how many cases would a dual-energy or spectral scan have been requested up-front, based on the patient condition alone, versus a conventional CT?
- How many patients would benefit from a diagnostic quality standpoint because spectral results were available with every scan?

To answer these questions, they evaluated the spectral reconstructions for clinical findings, artifacts and image quality in 78 adult patients.

Spectral CT would have been prospectively recommended for 19% of the patients in the study. However with the ability to retrospectively request spectral data, the readers asked for additional reconstructions on 67 patients. Retrospective spectral data was required on average 2.3 instances per patient.

Results

The radiologists determined that using a high MonoEnergetic (MonoE) image was clinically useful to reduce artifacts, while low MonoE helped to improve contrast resolution, therefore helping to boost the contrast enhancement of vascular structures. The iodine-only images were beneficial in helping the clinician evaluate cystic lesions in 15.9% of the studies. When iodine-only was used to help the clinician evaluate solid lesions, it benefited 61.36% in lesion detection. Additionally, they found that, in 33.3% of the cases, Z effective benefited in the evaluation of stones.



Conclusion

Spectral detector CT data has the ability to retrospectively reconstruct data when incidental findings or inconclusive results are discovered on conventional CT scans, thereby improving diagnostic capabilities. The ability to use lower MonoE's in exams that may have poor enhancement due to missed bolus, or with patients who could be compromised with contrast, was also clinically useful. Additionally, the higher MonoE's reduced artifacts. The iodine-only spectral results helped the clinician evaluate cystic and solid lesions, while the Z effective spectral results helped with stone analysis.

CLINICAL RELEVANCE

In patients that may not have been pre-selected for Spectral CT, the Philips IQon Spectral CT scanner improves diagnostic capabilities by allowing for retrospective reconstruction of scan data.

www.philips.com/IQon

Incremental benefit and clinical significance of retrospectively obtained spectral data in a novel spectral detector CT technology- Initial experiences and results *C M Martinez Rios Arellano, MD; R C Gilkeson, MD; Prabhakar Rajiah, MD, FRCR, Cleveland, OH*

Results from case studies are not predictive of results in other cases. Results in other cases may vary.

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