

Submission Type: Scientific Presentations

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Primary Category: Musculoskeletal
Secondary Category: Tumors, Soft Tissue

Improved detection of melanoma metastases using iodine maps from dual energy CT

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PURPOSE

Increasing workload for radiologists demands innovative solutions to preserve high quality of reports. Dual energy CT (DECT) provides contrast media mapping without a precontrast scan and allows high-contrast visualization of enhancing lesions. Goal of this study is to evaluate the potential of iodine maps (IM) from DECT to improve detection of melanoma metastases.

METHOD AND MATERIALS

75 DECT scans (thorax (T) and abdomen (A)) from 75 melanoma patients were retrospectively analyzed. For each patient 3 conventional image reconstructions (T: lung kernel (B70f very sharp) 1mm axial and soft tissue kernel (D20f smooth) 3 mm axial, A: soft tissue kernel (D20f smooth) 3 mm axial) were performed. With commercially available software, the spectral information from DECT data was used to generate IM in axial 3 mm slices (for lung parenchyma additional 1 mm slices). These maps are comparable to color coded CT images, but the displayed voxel values base exclusively on materials which the algorithm identifies as contrast media. To facilitate radiological assessment, an overlay of IM and conventional CT (cCT) was provided. A radiologist analyzed initially cCT and afterwards the IM. Number, localization and characterization of lesions detected additionally by assessing the IM were reported.

RESULTS

In 29 patients in total 44 lesions (17 metastases) were additionally detected on IM. All lesions could retrospectively be identified on cCT and were located in the liver (34%), inter- or intramuscular (23%), subcutaneous (9%), lung (7%), mesenterial (5%), intestinal (5%), mediastinal (5%), skeleton (4%), pancreas (2%), vagina (2%), supraclavicular (2%) and peritoneal (2%). Lung findings include 2 pulmonary emboli.

CONCLUSION

In view of increased workload powerful tools supporting a fast and accurate assessment of radiological images are essential. This study demonstrates that IM from DECT improve detection of metastases as well as relevant secondary findings like pulmonary emboli in staging examinations of melanoma patients. To the best of our knowledge, the potential of iodine maps for lesion detection in staging examinations has not been shown before.

CLINICAL RELEVANCE/APPLICATION

Increased workload bears the risk of impaired quality of CT reports. IM from DECT improve detection of metastases and relevant secondary findings without increasing radiation dose.

FIGURE (OPTIONAL)

Uploaded Image

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Disclosures:**Nothing to disclose:**

Monika Uhrig

Nothing to disclose:

David Simons

Nothing to disclose:

Heinz-Peter Schlemmer

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