

Aquilion ONE Clinical Evidence: Body Perfusion

Hepatocellular carcinoma treated with sorafenib: Arterial tumor perfusion in dynamic contrast-enhanced CT as early imaging biomarkers for survival

Nakamura Y, Kawaoka T, Higaki T, Fukumoto W, Honda Y, Iida M, Fujioka C, Kiguchi M, Aikata H, Chayama K, Awai K
European Journal of Radiology 98 (2018) 41–49

- Arterial Perfusion measured by CT before treatment was significantly associated with the overall survival rate of HCC patients. In addition, the ratio of arterial perfusion before and after treatment tended to be associated with overall survival. Taken together, early evaluation by hepatic perfusion CT yields imaging biomarkers for predicting the overall survival of HCC patients treated with sorafenib.

Dynamic Contrast-Enhanced Perfusion Area-Detector CT: Preliminary Comparison of Diagnostic Performance for N Stage Assessment With FDG PET/CT in Non-Small Cell Lung Cancer

Ohno Y, Fujisawa Y, Sugihara N, Kishida Y, Seki S, Koyama H, Yoshikawa T
AJR Am J Roentgenol. 2017 Nov;209(5):W253-W262

- Dynamic first-pass CE perfusion ADCT is as useful as FDG PET/CT for the differentiation of metastatic from non-metastatic lymph nodes and assessment of N stage in patients with non-small cell lung cancer.

Dynamic contrast-enhanced perfusion area-detector CT assessed with various mathematical models : Its capability for therapeutic outcome prediction for non-small cell lung cancer patients with chemoradiotherapy as compared with that of FDG-PET / CT

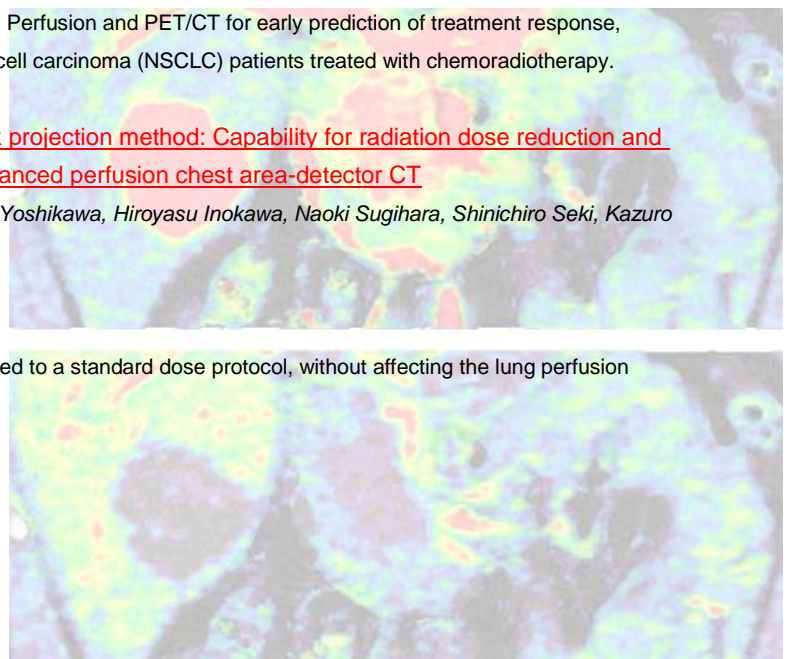
Ohno Y, Fujisawa Y, Koyama H, Kishida Y, Seki S, Sugihara N, Yoshikawa T
European Journal of Radiology 86 (2017) 83–91

- This study directly compared the capability of CT Lung Perfusion and PET/CT for early prediction of treatment response, disease progression and overall survival of non-small cell carcinoma (NSCLC) patients treated with chemoradiotherapy.

Hybrid Type iterative reconstruction method vs. filter back projection method: Capability for radiation dose reduction and perfusion assessment on dynamic first-pass contrast-enhanced perfusion chest area-detector CT

Yoshiharu Ohno, Hisanobu Koyama, Yasuko Fujisawa, Takeshi Yoshikawa, Hiroyasu Inokawa, Naoki Sugihara, Shinichiro Seki, Kazuro Sugimura
European Journal of Radiology, 2016, 84: 164-175

- Dose could be reduced by 50% with AIDR3D compared to a standard dose protocol, without affecting the lung perfusion results.



Preoperative hepatic CT perfusion as an early predictor for the recurrence of esophageal squamous cell carcinoma: Initial clinical results

Fujishiro T, Shuto K, Hayano K, Satoh A, Kono T, Ohira G, Tohma T, Gunji H, Narushima K, Tochigi T, Hanaoka T, Ishii S, Yanagawa N, Matsubara H

Oncology Reports, 2014, 31: 1083-1088

- Liver perfusion was performed before surgery and then performed again at follow up. The preoperative Perfusion Index of the liver may be a useful imaging biomarker for predicting the recurrence of patients with esophageal cancer. The study demonstrates another potential application for Liver perfusion.

Comparison of Quantitatively Analyzed Dynamic Area-Detector CT Using Various Mathematic Methods With FDG PET/CT in Management of Solitary Pulmonary Nodules.

Ohno, Yoshiharu and Nishio, Mizuho and Koyama, Hisanobu and Fujisawa, Yasuko and Yoshikawa, Takeshi and Matsumoto, Sumiaki and Sugimura, Kazuro

AJR, 2013, 200(6): W593-602

- Dual-input maximum slope method has better potential for the diagnosis of pulmonary nodules than dynamic area detector CT analyzed using other methods and PET/CT. All Dual Input Maximum Slope indexes as well as Single Input Maximum slope perfusion and PET/CT was significant for managing pulmonary nodules.

Differentiation of malignant and benign pulmonary nodules with first-pass dual-input perfusion CT.

Yuan, Xiaodong and Zhang, Jing and Quan, Changbin and Cao, Jianxia and Ao, Guokun and Tian, Yuan and Li, Hong

European Radiology, 2013

- Investigating single pulmonary nodules (SNA) with Dual Input Maximum Slope for discrimination of malignancy vs benign. They found a threshold of 42% for the Perfusion Index (PI) is significant. Above 42% the SPA is benign with confidence. Below 42% is highly suspicious of malignancy and requires a biopsy. The lung perfusion with AIDR 3D results in an effective dose of 4.55 mSv ($k = 0.014$).

Lung cancer perfusion: can we measure pulmonary and bronchial circulation simultaneously?

Yuan X, Zhang J, Ao G, Quan C, Tian Y, Li H

European Radiology, 2012 August

- The paper focuses on the advantages of 16cm Z-Axis dynamic scanning of pulmonary malignant tumors and the ability to quantify blood flow in lesions using a dual-input analysis algorithm. Demonstration that lung tumors have a dual blood supply and the ratio of each blood supply can indicate malignancy.

[Multi-organ perfusion CT in the abdomen using a 320-detector row CT scanner: Preliminary results of perfusion changes in the liver, spleen, and pancreas of cirrhotic patients.](#)

Motosugi U, Ichikawa T, Sou H, Morisaka H, Sano K, Araki T.

Eur J Radiol. 2012 Jan 5. [Epub ahead of print]

- Very good discussion of the scan protocol and Aquilion ONE volume acquisition advantages vs helical shuttle acquisition. Liver, pancreas and spleen perfusion values for normal patients are similar to previously published values. Interesting discussion of cirrhotic liver vs non-cirrhotic liver perfusion. A good reference paper for normal perfusion values of the upper abdominal organs.

[Perfusion measurement of the whole upper abdomen of patients with and without liver diseases: Initial experience with 320-detector row CT](#)

Kanda T, Yoshikawa T, Ohno Y, Fujisawa Y, Kanata N, Yamaguchi M, Seo Y, Yano Y, Koyama H, Kitajima K, Takenaka D, Sugimura K

European Journal of Radiology, 2011,

- This paper describes normal perfusion values for the liver, spleen, pancreas and stomach. Repeatability is demonstrated with a before and after therapy case.

[Differentiation of Malignant and Benign Pulmonary Nodules with Quantitative First-Pass 320-Detector Row Perfusion CT versus FDG PET/CT](#)

Ohno Y, Koyama H, Matsumoto K, Onishi Y, Takenaka D, Fujisawa Y, Yoshikawa T, Konishi M, Maniwa Y, Nishimura Y, Ito T, Sugimura K

Radiology, 2011 Feb, 258(2):599-609

- Single input maximum slope and patlak analysis methods can be used to distinguish between benign and malignant pulmonary nodules with CT perfusion.

[Whole-organ perfusion of the pancreas using dynamic volume CT in patients with primary pancreas carcinoma: acquisition technique, post-processing and initial results.](#)

Kandel, Sonja and Kloeters, Christian and Meyer, Henning and Hein, Patrick and Hilbig, Andreas and Rogalla, Patrik

European radiology, 2009, 19(11): 2641-6

- Whole organ perfusion of the pancreas in patients with carcinoma. Significant difference in perfusion measurements between normal tissue and tumor.