Cancer Imaging

SCIENTIFIC SESSION PRESENTATION

Open Access

CT texture analysis of pulmonary lesions in patients suspected for lung cancer

MB Andersen[*], SW Harders, B Ganeshan, J Thygesen, HH Madsen, F Rasmussen

From International Cancer Imaging Society (ICIS) 14th Annual Teaching Course
Heidelberg, Germany. 9-11 October 2014

Objective

In this preliminary report we evaluate the impact of CT texture analysis (CTTA) of pulmonary lesions when compared to final tumour stage in patients with suspected lung cancer on contrast enhanced CT.

Methods

Using texture analysis, we analysed 104 lesions in 104 patients suspected for lung cancer with a positive CT correlate. The analysis was performed using TexRAD (developed by TexRAD Ltd. UK). Histology was our reference standard. Malignancy was present in 92 lesions. CTTA comprised a filtration-histogram technique where filtration extracted and enhanced features of different sizes (fine, medium, coarse – scales) followed by histogram analysis using mean (M), entropy (E), uniformity (U), total number of voxels and kurtosis (K) within the entire volume of the suspected lesion. The operator performing the CTTA was blinded to the histological results.
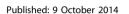
Results

In 58 malignant lesions with histologically verified TNM tumour stage, a Spearman's rank correlation found significant positive correlations between Kurtosis and tumour stage at coarse filter scales. ($\rho(58)=0.476$, $p<0.0005$). We also found a significant positive correlation between total number of voxels and tumour stage on unfiltered data ($\rho(58)=0.387$, $p=0.003$)

Conclusion

A significant correlation between texture figures and final tumour stage was found in patients with lung lesions suspected for lung cancer. Texture analysis may add complementary information to CE-CT.

Submit your next manuscript to BioMed Central and take full advantage of:

- **Convenient online submission**
- **Thorough peer review**
- **No space constraints or color figure charges**
- **Immediate publication on acceptance**
- **Inclusion in PubMed, CAS, Scopus and Google Scholar**
- **Research which is freely available for redistribution**

Submit your manuscript at
www.biomedcentral.com/submit

BioMed Central

* Correspondence: mibrandersen@gmail.com
Department of Radiology, Aarhus University Hospital, Aarhus, Denmark