FROM VISION TO DECISION

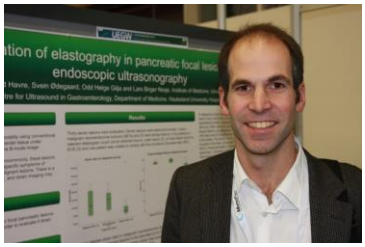
SEMINAR FRIDAY 29.05.2015

PLACE: MedViz Facilities., Møllendalsbakken 7, 5th floor

TIME : 12:00-13:00

SPEAKERS/TITLE

Jeremie Fromageau, Medical Physicist at the Royal Marsden Hospital and Research fellow working at the Institute of Cancer Research
Title: The 5 best ways of imaging the tissue elasticity. You won't believe #4



Roald Flesland Havre, Haukeland University Hospital
Title: Elastography – imaging of elastic properties in soft tissue

ABSTRACT

Fromageau

Change in tissue stiffness has been used for diagnosis purpose since the antiquity, but it was not before the early 90's that a method to image internally the tissue elasticity has been proposed. Elastography is now a well commercially integrated imaging technique, and with the development of quantitative elastography it is becoming a reliable tool to in many clinical applications. Today, the term elastography encompass a rather wide range of methods, some taking advantage of some of the most fascinating techniques available in ultrasound. In this presentation, I will talk about the different techniques of elastography from quasi-static compression to shear wave speed imaging, and what are the future developments in this field.

Havre

Several pathological processes change the elastic properties of the normal tissue. Typically inflammation and neoplastic processes increase the tissue hardness, and this has been recognized by using palpation as part of the clinical examination for centuries.
Today strain imaging and shear wave methods allow imaging and quantification of tissue stiffness, which may add useful information in diagnostic imaging. Due to its good temporal resolution, ultrasound is an excellent modality to track shape changes in the tissue under small compressions and decompressions, this allows calculation of local strain in real time. The recorded strain itself is dependent on the amount of stress applied. Both external stress and internal stress from arterial pulses, breathing and heartbeat can be used to create stress for strain imaging.
Acoustic pulses or physical pushing can be used to create shear waves travelling perpendicularly on the direction of applied stress. These waves can be tracked by ultrasound and their squared velocity is proportional to the tissue elasticity. Using this method, a quantitative measure of tissue stiffness is possible. Strain and Shear wave imaging has been used for diagnostic imaging in several organs including breast, thyroid, prostate, muscle. In this presentation I will focus on the gastroenterological applications on liver, pancreas and bowel wall and present some of the opportunities as well as limitations of the methods.

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