EXPERIMENTAL SUBSTANTIATION OF MODELING OF ABSCESSES OF VARIOUS LOCALIZATIONS

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Background. The problem of experimental and urgent purulent surgery is the search for new ways of modeling and effective minimally invasive treatment of abscesses of various localizations. Modeling the delimited purulent cavity in the liver, abdomen and soft tissues remains an unresolved problem, despite the many methods of creating abscesses in the literature.

Aim. The aim of the study was to simulate purulent abscesses of the liver, soft tissues and abdominal cavity.

Material and Methods. In an experiment on 20 rabbits of the Chinchilla breed and 40 white laboratory rats, modeling of liver abscesses (20), soft tissues (20) and abscesses in the right ileal region (20) of the abdomen was performed. Initially, a cystic cavity was created by introducing a modernized Fogerty and Foley catheter with a balloon inflated to 2 ml through the trocar under ultrasound control, at the distal end, while the end of the catheter was covered with skin doppler. Five days later, the balloon was emptied and the catheter was removed. The formation of a purulent abscess involved the injection of a suspension of Staphylococcus aureus with a microbial load of 2 ml×10^6 cfu in a formed aseptic cavity (Patent for invention No. 2601378 on November 14, 2016).

Results and Discussion. The obtained models of suppurative abscesses in the liver, abdomen and soft tissues had corresponding clinical characteristics of the delimited abscess, which was confirmed by instrumental, pathomorphological and microbiological studies. On the fifth-sixth day after infection of the cavity a model of a classical purulent abscess was obtained.

Conclusions. The proposed method for modeling abscesses in the liver, abdomen and soft tissues is low-traumatic, provides a guaranteed formation of abscess, does not require any complicated manipulation and expensive technical equipment.

ACOUSTIC RADIATION FORCE IMPULSE (ARFI) ELASTOGRAPHY QUANTIFICATION OF MUSCLE STIFFNESS OVER A COURSE OF GRADUAL ISOMETRIC CONTRACTIONS: PRELIMINARY STUDY

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Key words: *acoustic Radiation Force Impulse, elastography, muscle stiffness*

Aim. To evaluate the feasibility of quantitative analysis of muscle stiffness by Acoustic Radiation Forced Impulse (ARFI) elastography over a course of graduate isometric voluntary contractions.

Material and Methods. The stiffness of the bilateral biceps muscle of 13 healthy volunteers was measured in real time by ARFI elastography, while the forearm was in neutralextended position, 90 degree self-flexed positions and 90 degree self-flexed position, with altered weights ranging from 1 to 8 kg placed on flattened palmar surfaces consecutively. The determined increases in biceps muscle stiffness were measured for both arms and correlated with the loadings weights adopted at progressive trial stages.

Results and Discussion. The mean shear wave velocity (SWV) values of biceps muscles in a neutral position, in 90 degree flex position and 90 degree flex position with 1 to 8 kg weights on palmar surfaces were 2.162±0.302 m/sec, 3.382±0.581 m/sec, and 3.897±0.585 to 5.562±0.587 m/sec, respectively. Significant correlations between the muscle SWV values and related palmar weights and between the SWV values of right and left sides at different trial stages were identified (r=0.951 and r=0.954, respectively). A mutual propagation path of deep regions to entire areas was described to account for the distribution of increase in stiffness with increases in palmar weights. The confidence of method regarding inter-observer difference was confirmed by the correlation analyses of the results (r=0.998).

Conclusions. ARFI elastography is a feasible imaging modality for quantifying the stiffness of isometrically voluntarily contracting muscles.

STEREOTOPOMETRY OF THE OCCIPITAL CONDYLES OF THE HUMAN SKULL

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Key words: *skull, occipital condyles, stereotopometric*

Aim. Definition of stereotopometric landmarks of the occipital condyles of the human skull.