Acoustic radiation force impulse elastography in ovine fetal liver
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Intrauterine fetal tissues development characterization is fundamental to assess fetal viability. We hypothesized that elastography examination will able to detect changes in fetal hepatic tissue stiffness, allowing follow the structural process of organic maturation. Therefore, aiming to evaluate the fetal hepatic tissue stiffness throughout ovine physiologic pregnancy, the fetal liver of 24 healthy pregnant ewes were evaluated weekly, from the tenth week until parturition by qualitative and quantitative acoustic radiation force impulse (ARFI) elastography. The grayscale elastograms were compared qualitatively between gestational weeks (gw) and shear wave velocities (SWV m/s) compared by Friedman's test and correlated with gestational age by linear, quadratic or cubic regression models (P < 0.05). At elastogram analysis, the liver presented as not deformable tissue and showed a not variable light gray tone throughout pregnancy. Already, the hepatic SWV (0,79±0,14 m/s at the tenth gw) increased gradually from the fourteenth (0,87±0,22 m/s), reaching it maximum values at the twentyfirst (0,96±0,28 m/s) gestational week (P < 0.001) and correlates strongly with fetal age (R2 = 0.80). Acoustic radiation force impulse-elastography showed to be an applicable and safe technique that allows detects hepatic stiffness modifications related with fetal development and gestational age.

Keywords: Elastography, fetal development, maturity, pregnancy, ultrasonography