

Supplementary Data 1. Standard Operating Procedure (English Translated Version)

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Title	Ultrasonographic Shear Wave Elastography in rat		

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1. Purpose

The purpose of this procedure is to outline for ultrasonographic shear wave elastography (SWE) in rat.

2. Scope

This procedure applies to the radiographer in Computed Tomography (CT)/Ultrasonography (US) core, Bioimaging Center and any researchers to perform SWE in rat.

3. Responsibilities

Radiographer is responsible to scan any CT and US examinations in CT/US core and maintain all CT and US machines.

The CT/US core professor is responsible to provide CT/US service to researchers and supervise radiographer's jobs.

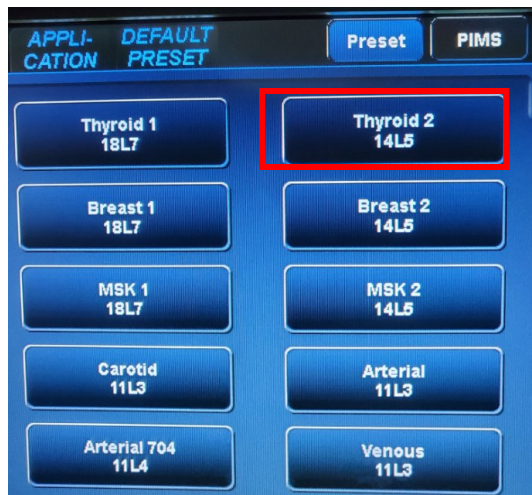
4. Procedures

4.1 Ultrasonography Setting

- Turn on US machine (Aplio 500 Platinum; Software version 6.0; Toshiba Medical Systems)
- Select a linear probe (14L5 transducer, 5.0–14.0 MHz).



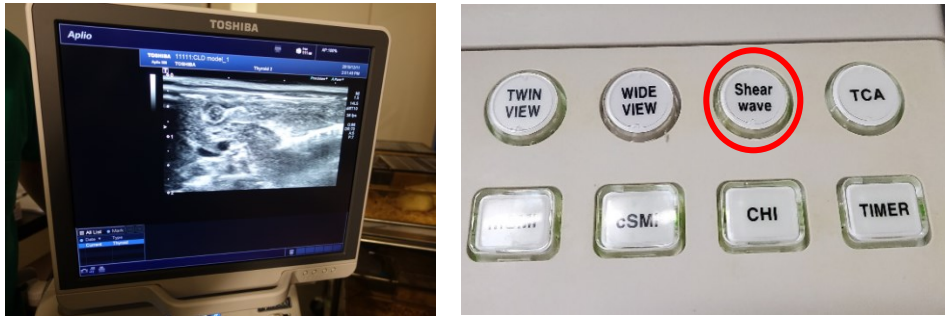
- Choose the preset of Thyroid2 which was already optimized for rat liver ultrasonography by a Toshiba Applicator.
- The default setting of Thyroid2 preset are as follows:
 Frequency: diffT14 MHz
 Field of View (width x depth): 40 mm x 30 mm
 Volume of Interest (VOI): Rectangular
 Frame per second: 0.2 fps
 Gain: 86
 Dynamic range: 70 dB



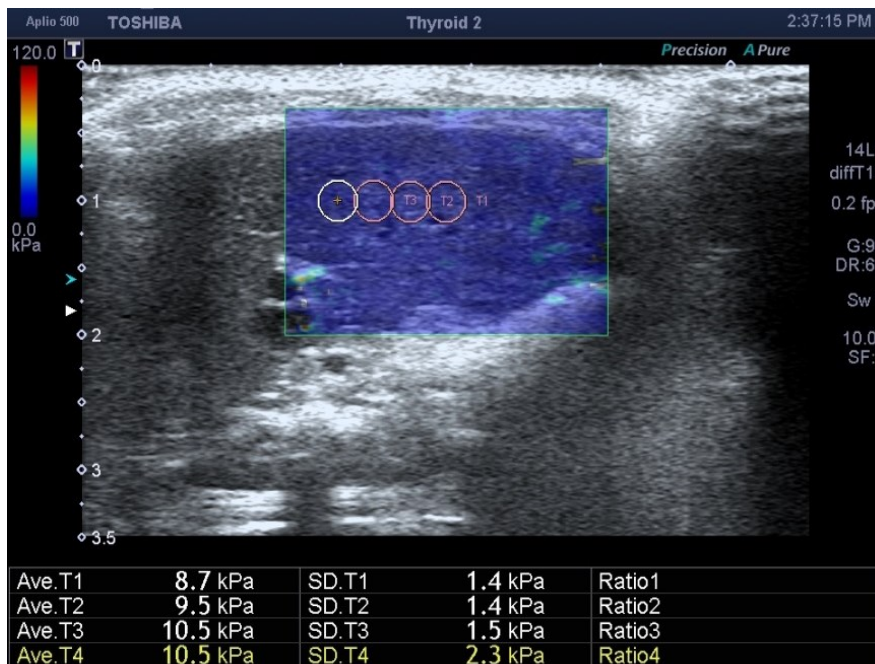
- 4.2 Anesthetize rats using isoflurane inhalant anesthetic agent (Please refer to the SOP for anesthesia, No. [REDACTED]).
 Shave the upper abdomen using electronic shaver.



- 4.3 Apply large amount of warm sonographic gel in the shaved area. Place the ultrasonographic probe gently to minimize artifacts. Do not push the probe hard. Do not shake hand. The probe should be perpendicular to the liver capsule.
- 4.4 Establish optimal sonic window under gray scale ultrasonography mode. Subcostal approach would be recommended for scanning the left liver.
- 4.5 When you obtain best sonic window on gray-scale image, press "Shear Wave" button on the right upper part of the main panel. Then, a rectangular sampling box will come up.



- 4.6 Place the region of interest (ROI) with sampling box in the left liver at a depth of approximately 1 cm below from the probe surface while avoiding large vessel and bile duct. Chose the ROI which is placed in the area of greatest shear wave uniformity showing homogenous color on the liver stiffness map.



- 4.7 Repeat 4.4 – 4.6 until you obtain 8 optimal ROIs. Please capture all images of the ROIs and send the image files to the server of bioimaging center.