



ULTRASONOGRAPHIC EVALUATION OF ABDOMINAL CAVITY ORGANS IN MICE

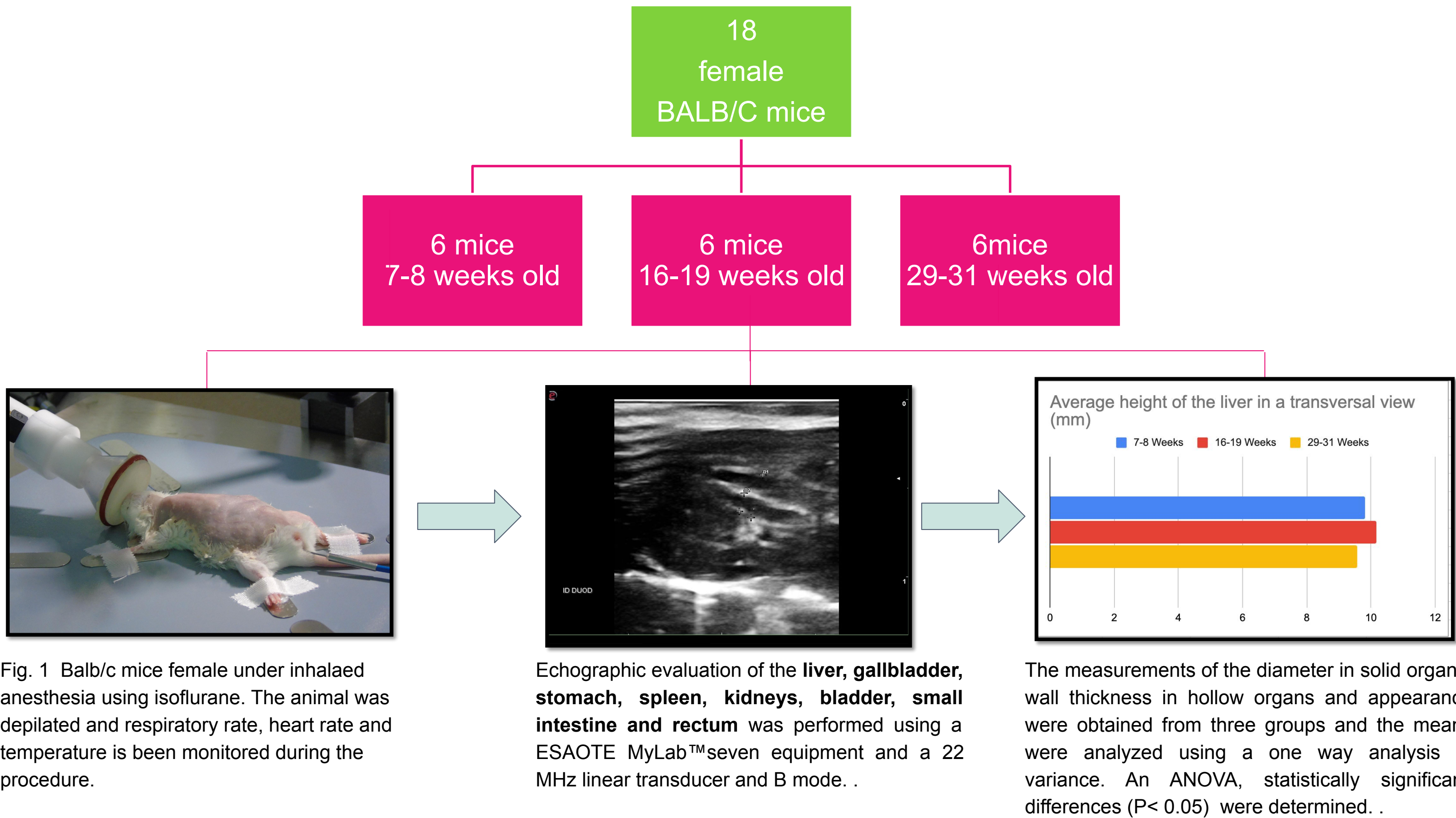
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Introduction

Mice are the most frequently used animal model in biomedical research. BALB/c mice are an inbred strain widely employed in the study of infectious and degenerative pathologies. The use of ultrasound as a diagnostic tool is a valuable option in the research field due to low cost, being non-invasive and its ability to offer real-time images. The goal of this study is to evaluate the abdominal cavity organs using ultrasound in BALB/c mice.

Methodology



The protocol was approved by an ethics committee CIR-0016-2016

Conclusion

Technological advances allow us to perform the evaluation of abdominal organs in mice using clinical equipment. This is the first study describing the size and appearance of the abdominal cavity organs using ultrasound in BALB/c mice. The results of this study can be used as a reference while monitoring abdominal organ changes during degenerative or infectious diseases research in BALB/c mice.

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Results

Measurements of the liver, stomach, spleen, kidneys, bladder, small intestine and rectum were obtained for all animals. The gallbladder is not always easily distinguished. A statistically significant increase in the length of the right kidney and thickness of the right renal cortex in the group aged 16-18 weeks was observed. No other significant differences were detected.

Table 1. Ultrasonographic measurements of the kidney

Age Group	Minimum Length	Maximum Length	Mean Length
7-8 Weeks	8.70	9.52	9.16
16-18 Weeks	9.41	10.3	9.81
29-31 Weeks	9.33	9.95	9.58

Table 2. Ultrasonographic measurements of the renal cortex

Age Group	Minimum Thickness	Maximum Thickness	Mean Thickness
7-8 Weeks	1.12	1.16	1.178
16-18 Weeks	1.15	1.52	1.600
29-31 Weeks	1.10	1.54	1.178

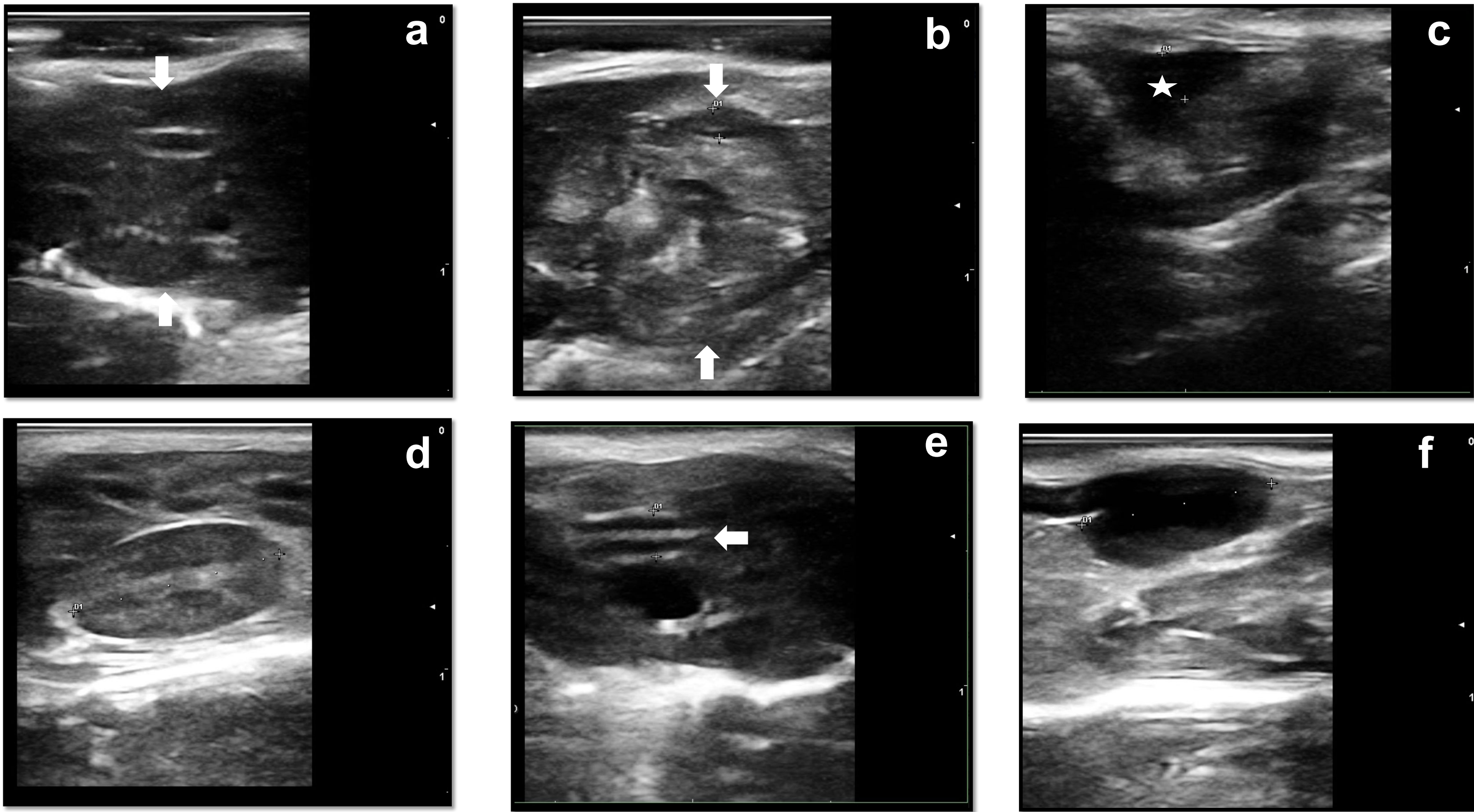


Figure 2. Ultrasonographic images in mode B of the abdominal cavity organs in BALB/c female mice. **a)** Transverse image of the liver (white arrows), portal vessels and hepatic vessels can be observed. The liver parenchyma is more echogenic than spleen (white star) but less echogenic if compared with renal cortex. **b)** Longitudinal view of the stomach (white arrows). Only two layers of the wall are visible, it is observed distended with an alimentary pattern. **c)** Transverse view of the spleen. Is visualized as a triangular structure, hypoechogenic if compared with the liver parenchyma. **d)** Longitudinal view of the left kidney. The renal cortex is observed hyperechogenic related to medulla, liver and spleen. **e)** Longitudinal image of the duodenum (white arrow), only two layers of the intestinal wall can be observed. **f)** Longitudinal image of the urinary bladder, observed as an anechogenic ovoid structure.