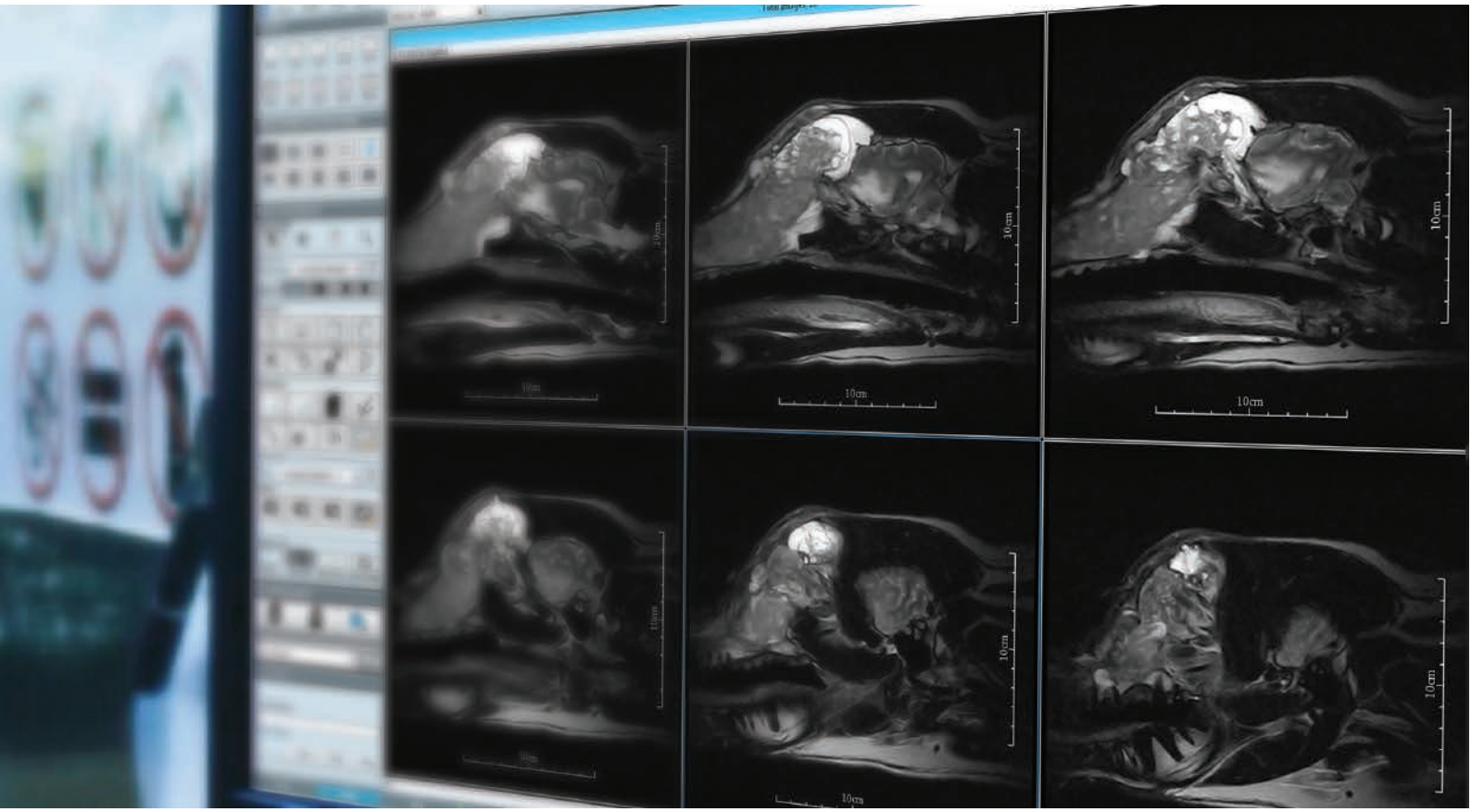
TIME MEDICAL
SYSTEMS

PANION PREMIER

veterinary MRI system

PANION PREMIER Features



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Ultra high resolution for precise diagnosis."

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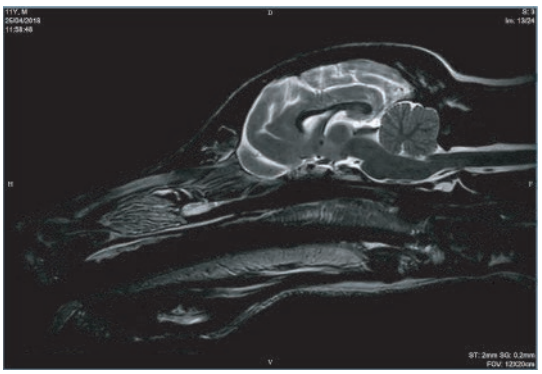
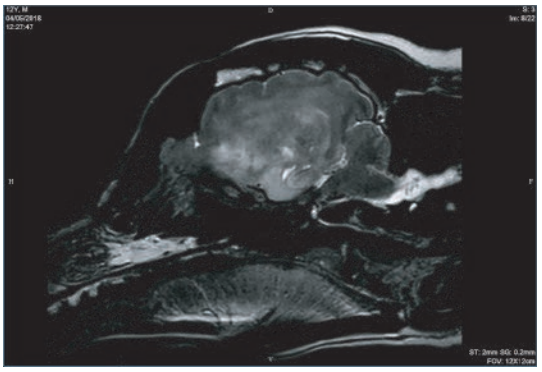
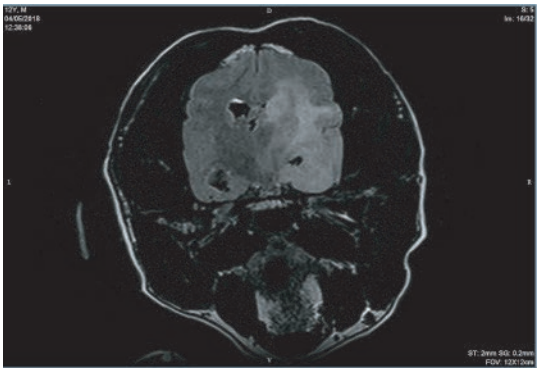
Clinical Images



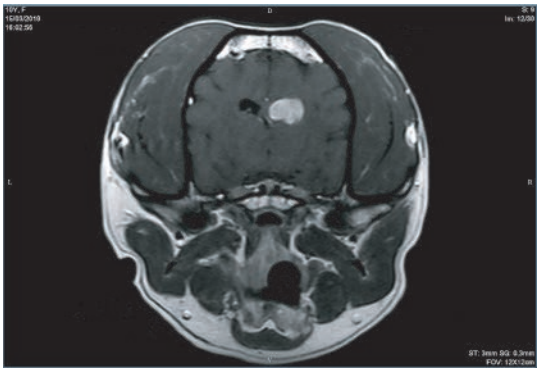
Brain T2 FSE Sagittal



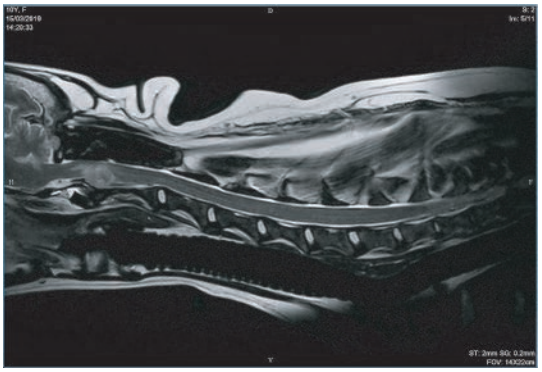
Brain T2 Sagittal



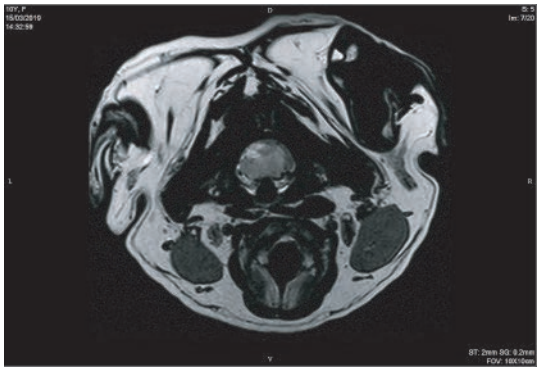
Brain FLAIR Axial



Brain T1 FSE Axial Post Contrast

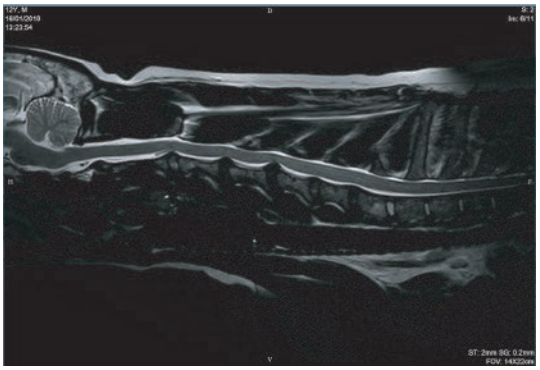


C-Spine T2 FSE Sagittal

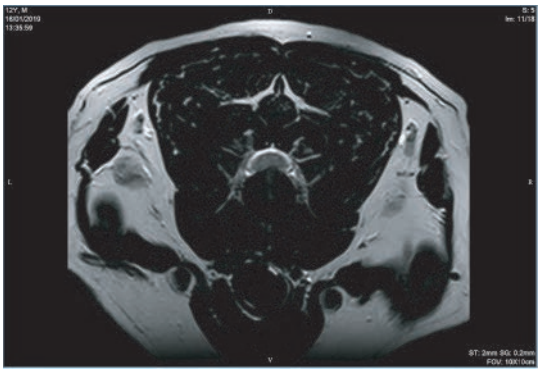


C-Spine T2 FSE Axial

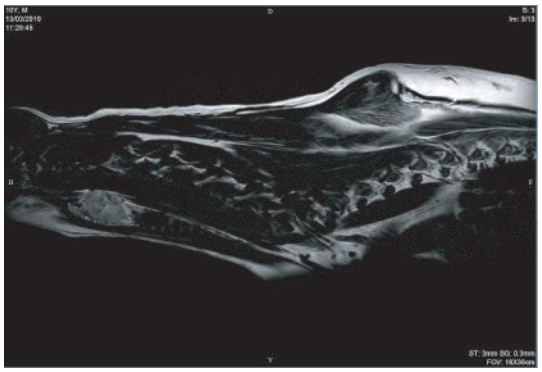
Clinical Images



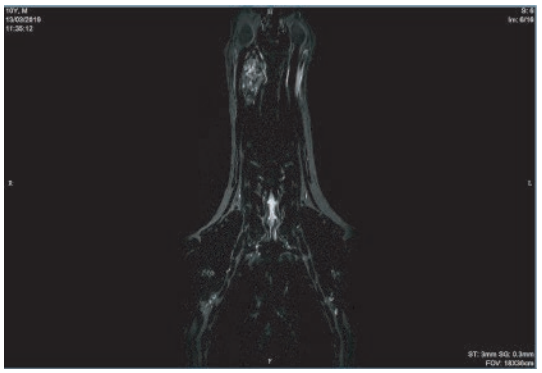
C-Spine T2 FSE Sagittal



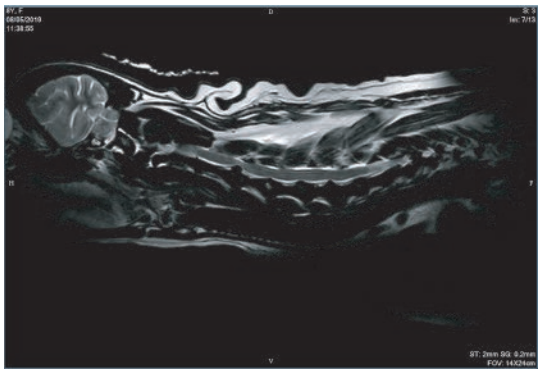
C-Spine T2 FSE Axial



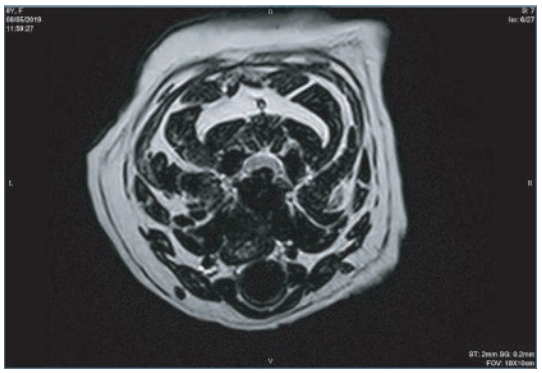
Thyroid T2 FSE Sagittal



Thyroid IRFSE Dorsal

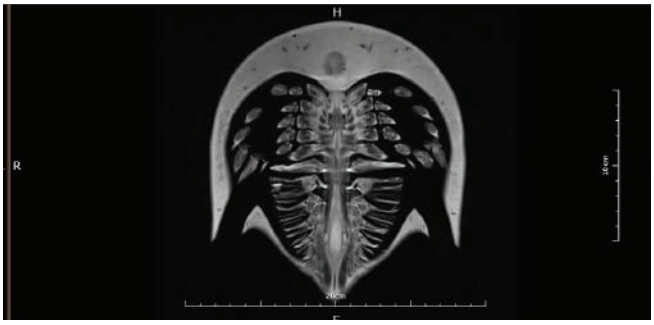


C-Spine T2 FSE Sagittal



C-Spine T2 FSE Axial

Clinical Images



Arthropoda Selecta 28(2): 247–251

Magnetic resonance imaging of the live tri-spine horseshoe crab (*Tachypleus tridentatus*)

Изучение анатомии живого мечехвоста *Tachypleus tridentatus* при помощи магнитного резонанса

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KEY WORDS: imaging anatomy; magnetic resonance imaging; tri-spine horseshoe crab.
КЛЮЧЕВЫЕ СЛОВА: анатомия, магнитный резонанс, мечехвост *Tachypleus tridentatus*.

ABSTRACT. Tri-spine horseshoe crab (*Tachypleus tridentatus*) is one of the most extensively studied arthropods from both biological and paleontological perspectives due to its unique suite of anatomical features and as a useful modern analogue for fossil arthropod groups. To assist the study and documentation of this iconic taxon, thorough understanding of their anatomy is necessary. Traditional dissection approach to study the anatomy of tri-spine horseshoe crab is technically demanding and time-consuming, and causes loss of specimen integrity. Magnetic resonance imaging (MRI) have currently become more readily available for zoomorphological investigation. A growing body of digitally stored anatomical data has become available to assist with biological, morphological and pathological investigation, without destroying specimens. The objective of the present study is to provide an overview of the normal cross-sectional anatomy of the live tri-spine horseshoe crab using T1W and T2W MRI, along with dissection images. MRI scan of 4 living tri-spine horseshoe crabs were performed by 1.5T MRI scanner. The resulting images provided excellent detail of major anatomical structures of live tri-spine horseshoe crabs. The illustrations in the present study provides an initial reference to evaluate anatomical structures of the tri-spine horseshoe crab on MR images.

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РЕЗЮМЕ. Благодаря уникальному набору анатомических особенностей и наличием современных аналогий вымершим группам артропод мечехвост *Tachypleus tridentatus* — одно из наиболее интенсивно исследованных членистоногих, как с биологической, так и с палеонтологической точки зрения. Для лучшего понимания этого таксона-иконы необходимо детальное исследование его анатомии. Традиционный анатомический подход, связанный с расчленением объекта, технически затруднителен и занимает много времени, при потере целостности образца. В настоящее время для зооморфологических исследований все чаще применяют магнитный резонанс (МР). Растущий объем оцифрованных анатомических данных доступен для биологических, морфологических и патологических исследований, которые можно проводить без разрушения объектов. Цель настоящей работы — на серии последовательных срезов дать обзор анатомии живого мечехвоста, используя T1W и T2W МР-изображения в сравнении с обычными срезами. МР-сканирование 4 живых мечехвостов было выполнено при помощи 1,5Т МР-сканера. Совмещенные изображения показывают точные детали основных анатомических структур мечехвоста и позволяют дать первые оценки качества МР-изображения этого членистоногого.

Introduction

Tri-spine horseshoe crab (*Tachypleus tridentatus* (Leach, 1819)) is one of the most extensively studied arthropods from both biological and paleontological perspectives due to its unique suite of anatomical features and as a useful modern analogue for fossil arthropod groups. To assist the study and documentation of this iconic taxon, thorough understanding of their anatomy is necessary.

The internal and external anatomical structures of euthanized or died horseshoe crab were studied repeatedly since nineteenth centuries and are regularly depicted in scientific literatures using dissection approach

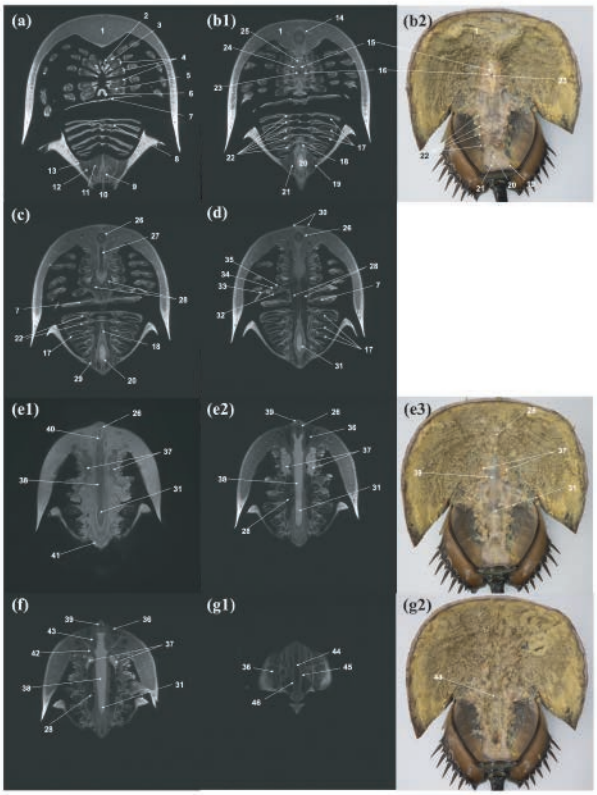

Fig. 2. Coronal MR images and corresponding dissection images of *Tachypleus tridentatus* at different levels of Figure 1: **(a)** T2W image at level 1; **(b)** T2W image (b1) and corresponding dissection image (b2) at level 2; **(c)** T2W image at level 3; **(d)** T2W image at level 4; **(e)** T1W image (e1), T2W image (e2), and corresponding dissection image (e3) at level 5; **(f)** T2W image at level 6; **(g)** T2W image (g1) and corresponding dissection image (g2) at level 7.

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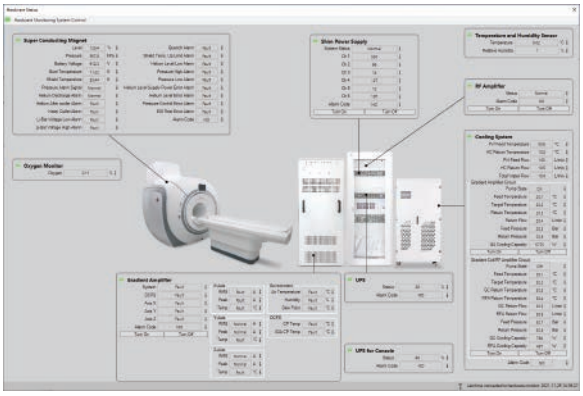

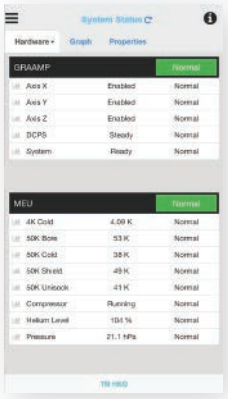

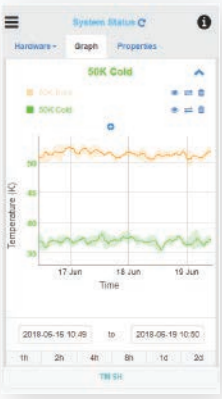

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