

Thoracic Viscera Radiograph of the Normal Grasscutter (*Thryonomys swinderianus*, Temminck, 1827).

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Introduction

- In recent times, efforts have been made to breed the Grasscutter, a rodent indigenous to the region, in West Africa. This has been made possible by advances in research, which have facilitated the development of breeding programs.
- Nevertheless, IBE et al. (2023) demonstrate that the fundamental and advanced biology of the respiratory, urinary, cardiovascular and endocrine systems of the Grasscutter remain prospective research areas with limited investigation in the case of African Grasscutter (SINKANGUENG MBOUGA, 2011). No articles on the cardiovascular and respiratory systems of grasscutter were found in the literature (MUSTAPHA et al., 2020).
- The interpretation of radiographic images is challenging due to the limited availability of supporting documentation. In contrast, more advanced techniques such as electron microscopy, radiology, ultrasound, and computer-assisted tomography (CT) or magnetic resonance imaging (MRI) are useful for elucidating the anatomy of the Grasscutter (AJAYI et al., 2010).
- The overarching objective of this study is to contribute to the knowledge base regarding the anatomy of the Grasscutter. In particular, the study will focus on the radioanatomical characteristics of the thoracic viscera of the Grasscutter, with the objective of performing radiographic examinations of the viscera of the thoracic

Material & methods

- Biological materials:** six (6) grasscutters (3 females and 3 males)
- X-ray equipment:** An Italray digital mobile X-ray machine was used. It was first commissioned in February 2023.
- The equipment features the following specifications: 230V; 50/60Hz; 0.5A; 3.6kVA, Italian manufacture.
- Location :** Sokodé (TOGO) (only accessible at weekends and on public holidays)
- Anaesthesia:** intramuscular injection of a mixture of ketamine and xylazine.
- The examination was conducted using either an X-ray without contrast agents and an X-ray with contrast agents for the purpose of bronchography.
- A 10ml syringe containing barium sulfate solution was administered orally via a urinary catheter to facilitate passage of the contrast medium into the respiratory tract
- Two males Grasscutters were employed for bronchography, with the following settings: The X-ray tube voltage was set at 63 and 66 kV, respectively, with an X-ray tube current of 10 mAs.



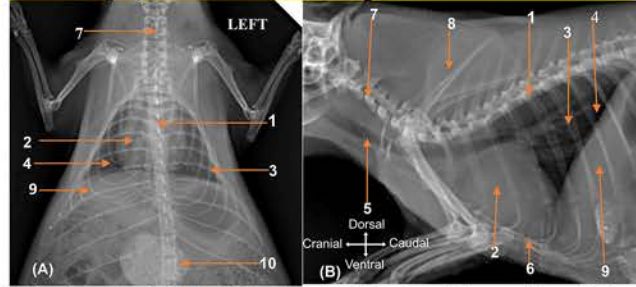
Figure 1: Mobil X-ray machine.



Figure 2: Grasscutter is positioned in the ventral position for radiographic imaging.

Results

Radiographs without contrast agents.

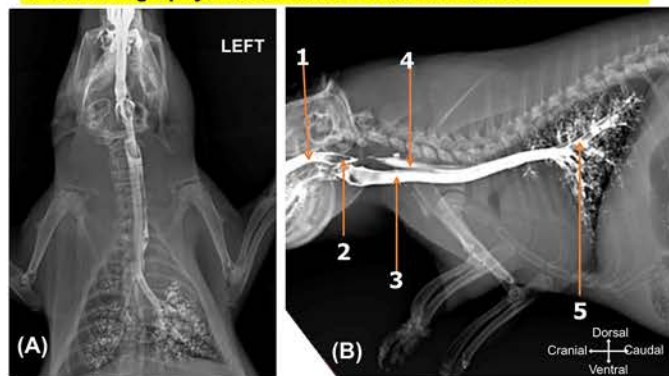


1. Vertebra thoracica; 2. Heart; 3. Ribs; 4. Lungs; 5. Trachea; 6. Sternum; 7. cervical vertebra; 8. Scapula; 9. Liver; 10. Stomach.

Figure 3: Ventrodorsal (A) and lateral (B) radiographs of the thoracic cavity of a Grasscutter.

- The thoracic cavity is relatively small, with a relatively large heart, particularly in the cranio-ventral position in profile and in the frontal position.
- In profile, the trachea and the major vessels (aorta and vena cava) are not readily discernible.

Bronchography: the utilisation of barium sulfate



1- Nasopharynx; 2- Pharynx; 3- Esophagus; 4- Trachea; 5- Bronchial tree.

Figure 4: Ventrodorsal (A), and lateral (B), radiographs of the grasscutter bronchography.

- The bronchial opacification observed in the study was attributed to barium sulfate, in contrast to the iodinated contrast agent utilized by WINN (2006) for bronchography in the rabbit model.
- The main bronchi divide into lobar bronchi in the lungs. The cranial lobar bronchi are shorter than the caudal lobar bronchi in both lungs.
- The right main bronchus is longer than the left. Near its origin, the latter gives way to a cranial lobar bronchus, directed laterally and then cranially, and ends in the middle and caudal lobar bronchi.
- The bronchography images of the Grasscutters are comparable to those obtained in the rabbit (WINN, 2006), despite the poor bronchial opacification.

Conclusion

- In conclusion, the radiographic examination of the thoracic viscera of the Grasscutter permitted the observation of the lungs and mediastinal organs in their normal position.
- Bronchography enables the observation of the disposition and aspects of the bronchi.

Note: These findings are consistent with those observed in the rabbit and have clinical relevance for veterinary medicine in the diagnosis of respiratory diseases and disorders affecting the mediastinum.

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