

Anatomy of the diaphragm bone in the dromedary

(*Camelus dromedarius* L., 1758)

investigated by Computed Tomography imaging (CT scan).

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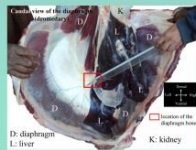
Aim: The diaphragm bone is always present in the dromedary (Fig. 1). There are few studies about this bone (Maskar, U., 1957, Namshir N., 1982), and nearly no morphometric studies present its characteristics. Namshir (1982) just indicates that the diaphragm bone is 0.6-1.4 cm thick; 1.7-2.2cm wide and 3.3 cm long. The aim of this work is to give some anatomical data by a non invasive method (CT scan).



Fig. 1: dromedary diaphragm bone

Material and Methods: 9 entire diaphragms of dromedaries were collected at the slaughter house (Fig. 2) and prepared at the anatomy laboratory of Ouargla (Algeria). The diaphragm bones (Fig. 3) were sent to France to perform a CT scan analysis. CT examinations were performed on a 16-slice Computed Tomography manufactured by Siemens (Sensation 16, dedicated to the veterinary environment and industry by Image-Et (Mordelles, France)).

Fig.2: location of the diaphragm bone



N°	Breed	Sex	Age (year)
1	Subtroual	Male	14
2	Subtroual	Male	15.5
3	Subtroual	Female	11
4	Subtroual	Female	15
5	Targui	Male	12
6	Subtroual	Female	14
7	Targui	Female	13
8	Subtroual	Female	15.5
9	Subtroual	Male	15

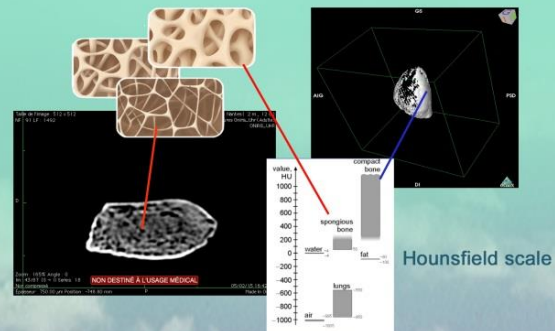


Fig.3: cranial (a) and caudal (b) views of the 9 diaphragm bones

Results: This bone is flat on one side and protuberant on the other. The central part of the bone has a mean HU value of -176 (-684 to 88) which corresponds clearly to spongy bone, and the external surface of the bone has a mean HU value of 2320 (1979 to 2664) which corresponds to compact bone. It consists of a central part with marrow and a peripheral compact cortex. The size of the bone is 0.81-1.40 cm thick, 1.55-2.45 cm wide and 1.75-4.49 long.

Bone	CC (cm)	PD (cm)	LR (cm)	UH max (ext.)	UH max (int.)	UH min (int.)	UH mean (int.)
1	0.99	2.45	1.75	2664	584	-981	50
2	1.00	1.55	1.78	2334	654	-1024	-65
3	1.09	1.61	2.39	1979	381	-1024	-263
4	1.40	2.38	2.45	2470	509	-1024	-684
5	0.89	1.78	2.43	2597	915	-1012	-58
6	1.24	1.92	2.65	2315	605	-1024	-274
7	1.06	1.95	2.21	2328	526	-1024	-325
8	0.81	2.22	4.49	2063	761	-1007	59
9	1.08	2.34	3.21	2127	938	-884	88
Mean	1.06	2.02	2.59	2320	653	-1000	-176
Max	1.40	2.45	4.49	2664	938	-884	88
Min	0.81	1.55	1.75	1979	381	-1024	-684
s	0.18	0.34	0.84	234	187	46	240

Size (CC, PD and LR) in cm and CT scan density in Hounsfield Unit (UH)



Hounsfield scale

Conclusions: These preliminary results give us a better understanding of the variability and the structure of the dromedary diaphragm bone.

References: Maskar, U., 1957: The bone of the diaphragm of the camel. *Acta Anat.* 4: 461-471.

Namshir N., 1982: Regional anatomy of camel internal organs. *J. Agriculture* 3, p. 25.



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