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Planar Lymphoscintigraphy for sentinel lymph node mapping in dogs with mast cell tumor: a pilot study.

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The histopathological assessment of the first node receiving lymphatic drainage from a tumor – defined as Sentinel Lymph Node (SLN) – is essential to determine stage, therapy and outcome in oncological patients. Both in human and veterinary medicine, lymphoscintigraphy is a recognized procedure for SLN detection (Mariani et al., 2004; Tuohy et al., 2009; Beer et al., 2017). In this study, we want to determine the most suitable pre-operative planar lymphoscintigraphy protocol for SLN mapping in dogs with mast cell tumor (MCT).
We selected 5 dogs diagnosed with cutaneous MTC, with clinically negative lymph nodes and no distant metastasis, undergoing surgical tumor removal, and we obtained owner's written consent. Planar lymphoscintigraphy was performed in patients under general anesthesia, after subcutaneous peritumoral injection of different doses of technetium-99m (Tc-99m) labelled colloid diluted reaching a 0.5 ml volume (Worley, 2014). The MegaBecquerel value (MBq) of the syringe was measured before and after the injection. Dynamic images (1 frame/second for 60 seconds) were taken at the moment of the injection, 3 and 8 minutes after the injection. Ventrodorsal (VD) and lateral (L) static images (120 seconds/frame) were taken until the identification of SLN had been made. If needed, the injection site was masked with a 2-mm lead foil. Results are showed in Table 1. In patient 1, the SLN was not identify, probably due to a superimposition with the injection site. During the study, we increased the injected MBq dose, in order to better visualize lymphatic path and SLN (Balogh et al., 2002). In fact, the number of static images needed to identify SLN have been reduced from 8,7 to 6. Masking the injection site proved to be useful for a better visualization of SLN. Dynamic images showed to be unnecessary for the SLN identification. For further studies, we suggest the injection of minimum 23,5 MBq Tc-99m activity and the acquisition of VD and L static images with and without masking the injection site.

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Table 1: Distribution of mast cell tumor (MCT) site, radioactive activity values of injected technetium-99m (MBq), number of dynamic (DI) and static images (SI) acquired and lymph node (LN) identified as the Sentinel Lymph Node (SLN). The patient 4 had 2 cutaneous MCT injected for SLN detection.

Patient	MCT site	Injected MBq	DI	SI	Identified SLN
Pat.1	right shoulder	8,2	3	8	0
Pat.2	left cranial abdomen	7,5	3	7	2 left accessory axillary LN
Pat.3	left flank	7,9	3	11	1 left accessory axillary LN
Pat.4a	right knee	25,8	3	6	1 right inguinal LN
Pat.4b	left thigh	26,7	3	6	1 left inguinal LN
Pat.5	right knee	23,5	3	6	1 right popliteal LN, 1 right inguinal LN

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