

INDOCYANINE GREEN FLUORESCENCE LYMPHOGRAPHY: AN EXPLORATORY STUDY OF SUPERFICIAL LYMPHATIC TERRITORIES IN THE HEAD AND HIND LIMBS OF 33 CAT CADAVERS

Alessandra Ubiali¹, Elisa Maria Gariboldi¹, Luigi Auletta¹, Alessia Di Giancamillo², Silvia Clotilde Modena¹,
Roberta Ferrari¹, Filippo Tagliasacchi¹, Valeria Martini¹, Damiano Stefanello¹

¹Department of Veterinary Medicine and Animal Sciences – University of Milan, Lodi, Italy

²Department of Biomedical Sciences – University of Milan, Milano, Italy

Ubiali Alessandra(1), Gariboldi Elisa Maria(1), Auletta Luigi(1), Di Giancamillo Alessia(2), Modena Silvia
Clotilde(1), Ferrari Roberta(1), Tagliasacchi Filippo(1), Martini Valeria(1), Stefanello Damiano(1)

(1) Dip. di Medicina Veterinaria e Scienze Animali, Università degli Studi di Milano, Lodi; (2) Dip. Di Scienze
Biomediche per la Salute, Università degli Studi di Milano, Milano

To date, animal models for lymphographic studies mainly focused on dog, while lymphography is rarely reported in cats, and even less involving cutaneous lymphatic territories [1]. This study aims to assess the feasibility of cutaneous lymphography using indocyanine green (ICG) fluorescence in cat cadavers and describe predictable lymphatic pathways from cutaneous regions of head and hind limb anatomical districts.

Frozen or refrigerated cadavers of adult cats that died for causes unrelated to the study were included. Twenty cutaneous regions (6 from the head; 14 from the hind limb) were selected using easily assessable anatomical landmarks, and expected draining lymphocentrums were presumed based on canine studies [2] since there is no similar information for cats. For each lymphography, a single selected cutaneous region per anatomical district was assessed. After intradermal ICG injections, lymphatic drainage was favored by massage and/or flexion-extension movements.

For each lymphography, all expected and detected lymphocentrums were dissected, and lymph nodes extirpated. Variables regarding cadavers and lymphography characteristics were assessed.

ICG-lymphography was repeated in 33 cadavers for a total of 84 selected cutaneous regions (26 from the head and 58 from the hind limbs). A success was recorded in 63/84 (75%) lymphographies, with a median migration

time of 8 (1-30) minutes. The ICG drained to the expected lymphocentrum in 28/63 (44%) lymphographies, and to other ones in 35/84 (56%).

ICG-lymphography is feasible in cat cadavers, regardless of technique or cadaver characteristics.

The observed difference in lymphatic drainage (56% to unexpected lymphocentrums) highlights the importance of specifically mapping lymphatic territories in cats. ICG-lymphography demonstrated as an effective technique also in cats cadavers and could be used to improve knowledge of feline lymphatic physiology. Further studies may provide a more complete understanding of superficial lymphatic territories in cats.

[1] Ratzlaff MH. The superficial lymphatic system of the cat, *Lymphology*, 3:151-159, 1970; [2] Suami et al. Lymphatic territories (lymphosomes) in a canine: an animal model for investigation of postoperative lymphatic alterations, *PLoS One*, 248:e69222, 2013.