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Volumetric modulated arc (radio) therapy in pets treatment: The "La Cittadina Fondazione" experience

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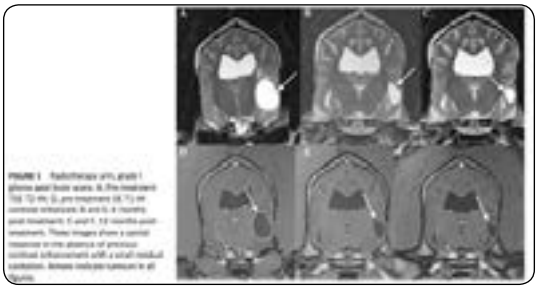
Volumetric modulated arc (radio) therapy (VMAT) is a modern technique for cancer irradiation widely used in human radiotherapy that allows high doses to be delivered to tumor volumes and low doses to the surrounding organs at risk (OAR). Veterinary clinic managing cancers in small animals (dogs, cats, rabbits) takes a natural advantage from this feature due to the small target volumes and distances between target and the OAR. In particular, sparing the OAR permits dose escalation and hypofractionation regimens reduce the number of treatment sessions with a simpler manageability in the veterinary field. Multimodal volumes definition is mandatory for the small volumes involved and a positioning device precisely reproducible with a setup confirmation is needed before each session for avoiding target missing. Also, the treatment plan elaboration must pursuit hard constraints and objectives and its feasibility has to be evaluated with a per patient quality control. The aim of this work is to report our center results with hypo-fractionated stereotactic irradiation of neural tumors in dogs interpret to brain meningiomas and gliomas, trigeminal nerve tumors, brachial plexus tumors, onco-endocrinology in dogs related to pituitary and adrenal tumors with vascular invasion and rabbit thymomas. In comparison with literature data, VMAT as a safe and viable alternative to 3D conformal radiotherapy, cone-based stereotactic radiotherapy as well in selected cases to surgery or chemotherapy alone or as an adjuvant therapy in pets.



Recent Publications

1. Dolera M, Malfassi L, Pavesi S, Finesso S, Mazza G, et al. (2017) Computed tomography, magnetic resonance imaging and a novel surgical approach of atlanto-axial instability with incongruence in dogs. J Vet Med Sci. doi: 10.1292/jvms.16-0077.
2. Dolera M, Malfassi L, Bianchi C, Carrara N, Finesso S, et al. (2017) Frameless stereotactic radiotherapy alone and combined with temozolomide for presumed canine gliomas. Vet Comp Oncol. 16(1):90–101.
3. Dolera M, Malfassi L, Bianchi C, Carrara N, Finesso Set al. (2017) Frameless stereotactic volumetric modulated arc radiotherapy of brachial plexus tumours in dogs: 10 cases. Br J Radiol. 90(1069):20160617.
4. Dolera M, Malfassi L, Pavesi S, Finesso S, Sala M, et al. (2016) Volumetric-modulated arc stereotactic radiotherapy for canine adrenocortical tumours with vascular invasion. J Small Anim Pract. 57(12):710–717.
5. Dolera M, Malfassi L, Mazza G, Urso G, Sala M, et al. (2016) Feasibility for using hypofractionated stereotactic volumetric modulated arc radiotherapy (VMAT) with adaptive planning for treatment of thymoma in rabbits: 15 cases. Vet Radiol Ultrasound. 57(3):313–20.

Biography

Mario Dolera completed his degree in Veterinary Medicine, Specialist in Pathology and Clinical of Animal of Affection (Orthopedics), PhD Veterinary Clinical Sciences (Neurology). Head of La Cittadina Fondazione Studi e Ricerche Veterinarie Romanengo (neuroscience, imaging and radiation oncology). Author of 40 scientific publications and 14 conference communications.

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