Immunohistochemical diagnostic of hibernoma in dog

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Abstract

The diagnosis of hibernoma is uncommon in veterinary medicine. In this report, we present an attempt to confirm hibernoma diagnosed in dogs by applying immunohistochemical tests routinely used in human pathology i.e. antibodies specific to protein S100, protein CD31, or smooth muscle actin (SMA).

Key words: CD31, S100, smooth muscle actin (SMA), canine hibernoma

Introduction

Brown adipose tissue (BAT), playing a key role in the production of heat along the pathway of endothermic adaptive thermogenesis, is manifested commonly in hibernating animals and in most species of mammals in the neonatal period. The ability of BAT to generate heat is linked with the expression of thermogenin protein (uncoupling protein 1; UCP1) localised in the inner membrane of mitochondria in brown adipocytes (Zancanaro et al. 1994).

Hibernomas are rare, benign tumors of brown adipose tissue. Diagnosed both in humans and animals, they are localised in various parts of the body and are most frequently described as a lesion developing in mature individuals (Moretti et al. 2010, Mavrogenis et al. 2011, Stuckey et al. 2013). Taking into account the appearance of the cells, character of stroma and presence in the sublayer of the spindle shaped cells, four types of hibernoma have been distinguished: typical, myxoid, spindle cell, and lipoma-like. The most common among these is the standard type (typical hibernoma) (Chirieac et al. 2006, Moretti et al. 2010a, Mavrogenis et al. 2011, Vassos et al. 2013). In view of the very rare occurrence of hibernoma in both humans and animals, we attempted an immunohistochemical diagnosis of this neoplasm, based on data available in the literature regarding the use of anti-CD31, as an alternative method for the determination of UCP1, which was successfully used by Rosso et al. (2006) in hibernoma diagnosed in humans.

Materials and Methods

The tumor was excised from a 12 year – old male German shepherd. An encapsulated light brown lesion was situated between the femoral muscles of