OBSERVATIONS ON THE NUCLEAR CHROMATIN PATTERN IN CELLS OF A CASE OF CANINE CIRCUMANAL GLAND ADENOMA IN TRINIDAD.

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ABSTRACT

An incidence of canine circumanal gland adenoma (CGA) is reported, apparently for the first time, in the island of Trinidad and Tobago. The case involved an 11-year-old Rottweiler dog which was presented in relatively good health except for noticeable masses around the perianal region. Apart from routine histopathological investigation which enabled a definitive diagnosis of CGA with secondary vascularization, analysis of the nuclear chromatin texture was performed on the digitalized images of both reserve and hepatoid cells of the neoplasm. The mean nuclear pixel intensity value of the images of processed CGA reserve cells was significantly lower than those of the processed CGA hepatoid cells (P<0.1). Our observation based on the texture analytical data suggests a high degree of rate of multiplication of the reserve cells at the expense of degenerating hepatoid cells. The relevance of this finding is discussed within the context of vascular supply to the neoplastic cells.

Keywords: Dogs; Circumanal gland adenoma; Digital imaging; Pixel intensity values; Mitosis

INTRODUCTION

Neoplasia of canine circumanal glands (CCG) are generally of interest from the standpoint of the peculiarity of the normal gland which gives rise to four types of neoplasia, as well as the pattern of manifestation of this form of neoplasia which is comparable to mammary neoplasia in humans in terms of aetiology and incidence. Within the context of incidence, CCG neoplasia was earlier reported as ranking 3rd in frequency of all canine neoplasia in the United States (1). The predilection sites of the neoplasia can extend beyond the predominant perianal location of the normal CCG to distant body regions, such as the forelimb (2) and the spinal cord (3). In comparison with mammary neoplasia of women, in which oestrogens have been linked with the aetiology, androgens have been proposed in the aetiology of CCG neoplasia (4). The incidence of CCG neoplasia has been reported as being higher in aged male dogs.

The normal CCG is hepatoid, with lobules which do not have lumina, but have ducts which remain non-patent as they fail to acquire lumina during the period of organogenesis (5). Rather, cysts occur within the lobules; these cysts being interpreted as unsuccessful attempts on the glands to acquire lumina. Studies utilizing CCG neoplasia as a neoplastic model in the canine population appear to be justified given the relatively high incidence of the neoplasia. It also appears justified for the human population, given the similarity of the neoplasia to mammary neoplasia in women. Paradoxically, the incidence of CCG in Trinidad and Tobago appears not to be remarkable, either due to lack of proper record-keeping or as a result of imprecise diagnosis. The present report represents the first of such report in Trinidad and Tobago as far as the authors are aware.

The authors, who also are currently embarked upon digital imaging and texture analytical research on different mammalian tissue, recognise the need to utilize CCG neoplasia as a model for other neoplasia. Apart from the interest generated in the present case, by virtue of its being apparently the first to be reported within Trinidad and Tobago, the present report also focusses on the nuclear chromatin pattern of the cells of CCG adenoma, employing modern digital imaging and texture analytical means. It is hoped that our methodology and observation will be applicable to resolving issues of other neoplasia.

MATERIALS AND METHODS

Clinical Evaluation

The 11-year-old male Rottweiler dog, named Panzer, was presented to the School of Veterinary Medicine Clinic, Faculty of Medical Sciences, Trinidad and Tobago, on September 20, 2003. The owner had reported subcutaneous perianal masses a few months