

37. Neoplasia and related proliferations in terrestrial mammals

The occurrence and manifestations of neoplasms in Australian native mammals are perhaps more difficult to ascertain than for those diseases caused by known infectious agents. This is because of the usually insidious nature of neoplasia, the non-specific clinical signs and the likelihood that – especially in the wild – animals with neoplasms will have compromised activity and may survive for only a limited time.

Scattered reports of neoplasia, mostly in Australian native mammals kept in zoos worldwide, have provided some indication of type of neoplasm and frequency of their occurrence, but review of archival material in the Australian Registry of Wildlife Health (ARWH) has provided the most comprehensive picture of these diseases (Canfield *et al.* 1990c, 1990d). It is, however, two decades since major review of the material and during the interval the ARWH collection has expanded considerably. Therefore, in compiling data on some fundamental aspects of neoplasia in Australian wildlife to include more recent cases, a brief analysis was conducted of submissions to the ARWH for the entire period 1974–2005.

As explained in relation to earlier reviews, limitations of utilising archival material in the ARWH include lack of information on history, clinical signs, any inter-current disease and necropsy findings. Frequently, fixed or paraffin-blocked biopsy or necropsy specimens are submitted for a second opinion or may simply be from cases considered of interest. Although review of the ARWH collection does not give a precise picture of the

occurrence and type of neoplasia, it does provide a useful overview.

For neoplasms and proliferative lesions submitted from 402 terrestrial mammals to the ARWH between 1974 and late 2005, the species groups affected, in order of decreasing frequency, were dasyurids (140), possums and gliders (74), koalas (70), macropods (43), rodents (28), bandicoots and bilbies (19), carnivores (9), bats (9), echidnas and platypuses (8) and wombats (2).

With regard to the histogenesis of tumours, 189 were considered to be mesenchymal, 177 were epithelial, 10 were neural or neuroectodermal and the remainder were diagnosed as undifferentiated or of undetermined type.

In some animals more than one tumour type was diagnosed, sometimes involving different organs. Of 430 tumours diagnosed, the approximate frequency of primary organ involvement, again in decreasing order, was skin and subcutis (132), lymphoreticular organs (87), liver and biliary (31), respiratory (22), bone (19), genitalia (18), alimentary (15), serous membranes (15), endocrine organs (11), cardiovascular system (10), urinary (9), muscle (7), nervous (6) and pancreas (2). For 46 tumours, the site or organ involved was unresolved or not stated. Probably the high representation of cutaneous tumours simply reflects their ready detection clinically, rather than being found at necropsy.

In this chapter, emphasis is placed on the gross pathological findings in animals with neoplasia and on relevant case history and clinical signs, where these