

# The Establishment of a Danish Veterinary Cancer Registry

## -a feasibility study

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Cancer registries are invaluable in the evaluation of cancer incidence (Monsein 1991). They offer estimates of risk of cancer in the population, as well as assessments of changes in cancer distribution over time and between groups (Monsein 1991, Misdorp 1996). A Veterinary Cancer Registry can help identify risk factors in carcinogenesis, and serve as a source of information on spontaneous animal cancers that may act as sentinels for human cancers (Misdorp 1996).

A pilot study investigating the potential of establishing such a registry in Denmark has been initiated. An epidemiologic evaluation of the submitted cases, along with an evaluation of the submission method will be presented.

### Former registries and findings

A number of registries and large surveys on cancer in dogs and cats have been instituted. Researchers primarily from the USA, but also from Norway, Sweden, and the UK have published data on cancer in companion animal populations (Arnesen et al. 2000, Michell 1999, Monsein 1991, Egenvall et al. 1998, Dobson et al. 2002). A few American registries still record new cases and a new web-based registry has emerged. The Internet has brought new potential, allowing anyone to register regardless of their actual physical location.

In Iowa a pilot study on oral, nasal, lung, and bladder cancers, revealed a correlation between canine cancer proportionate incidence ratios and human cancer incidence rates. The canine ratio changes preceded the human changes by 2 years, suggesting that fluctuations in proportionate incidence ratios in cancer in dogs may be useful in the prediction of human cancer patterns (Garbe 1988). The tumours with the highest incidence levels in humans are associated with the digestive- and respiratory systems and the bladder. These are most frequently exposed to environmental agents such as food, pollutants, and tobacco smoke (Misdorp 1996).

### Risk factor identification

One of the main purposes of tumour epidemiology is the detection and identification of independent risk factors (Misdorp 1996). Data from a cancer registry can be used in the analyses and identification of both exogenous and endogenous risk factors for tumour diseases by comparison of affected and non-affected animals (Misdorp 1996). A long list of risk factors has been investigated, and a range of potentially cancer promoting substances and genetic properties has been identified. The comparative epidemiology of tumours has led to the assumption that spontaneous neoplasms in companion animals may serve as models for studying the health effects of environmental hazards on humans (Glickman 1990, Reif et al. 1992, Buck 1979). Differences in cancer occurrence between different breeds of dogs have been recorded, suggesting that dogs might be useful in the investigation of the genetic influence in carcinogenesis (Arnesen et al. 2000).

## **Spontaneous animal models**

Epidemiological studies of human and animal cancer in the same geographic areas have produced interesting data. The distribution between the different cancer forms varies for man and companion animals, allowing for the animals to be used as models for cancers that occur infrequently in man (Misdorp 1996, Arnesen et al. 2000). Utilising companion animals as sentinels, it is possible to assess the effect of environmental exposures without the potential confounding effects of alcohol, tobacco, and occupational exposures (Garbe 1988). Sentinels may provide early warning of potential risks, as animals may develop comparable tumours to humans in response to the same risk factors in the same environment (Dorn et al. 1966, Schalie et al 1999). Neoplasias in companion animals are often evident prior to the detectable disease in humans, as latency periods are shorter in these species (Schalie et al. 1999, Garbe 1988).

## **Feasibility study**

The objective of this study was to evaluate the feasibility of a web-based submission form utilized for the initiation of a Danish Veterinary Cancer Registry. A prospective study was initiated in the spring of 2005. Since that time eighteen clinics across Denmark have been reporting neoplasias to a central registry at The Royal Veterinary and Agricultural University. Information reported includes species, breed, sex, age, and zip-code. Both benign and malignant neoplasias have been being recorded.

Cooperation with the Danish Cancer Registry for humans has been established to ensure the possibility for comparison and correlations with human data. This registry can be cross-referenced with others to locate neoplasms related to specific occupations or geographical areas. It is the intention that the Danish Veterinary Cancer Registry in cooperation with The Danish Dog Registry and two Danish cat registries could provide some of the same opportunities.

At present, the Danish Veterinary Cancer Registry holds more than 300 cases. At the time of the symposium an updated epidemiologic evaluation of submitted cases will be presented with a comparison to other registries of cancer in veterinary populations. Experiences with the submission method will also be discussed.

The usefulness of registry data depends on the quality of the characterisation of the population at risk. The Danish dog and cat populations are well-known as registration is required by law. This suggests that the establishment of a comprehensive Danish Veterinary Cancer Registry may provide detailed information on incidence and risk factors in cancer research and promote better health of both humans and companion animals.

## **Perspectives**

Veterinary cancer registries provide for the advancement of veterinary and human medicine. Evaluation of cancer incidence, risk, and treatments protocols in veterinary patients may be used to provide information for the treatment of human cancer patients (Khanna and Vail 2003, Vail and MacEwen 2000). Retrospective data analysis might be utilized to replace portions of risk factor studies that might otherwise require the use of experimental animals. Researchers will be able to work with naturally occurring cancers that may share a closer resemblance to spontaneously occurring cancers rather than experimentally induced cancers (Khanna and Vail 2003).

Launching the final registry is anticipated in 2006. This edition of the registry is expected to encompass all the adjustments and learning experiences from the feasibility-study, and allow for every veterinary clinic and hospital in Denmark to submit cases.

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