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Histological Study of Salivary Glands in Cats and Dogs

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Abstract: The dog is a kind of spiritual animal, which has been domesticated by humans for thousands of years. It has a keen sense of smell, quick action, understanding and loyal to its master. In many countries, all kinds of beautiful dogs have already become the most popular family pets. Research on the relationship between communication and behavior shows that small cats show significant consistency in odor marking and social behavior. Odor marking behavior may not only play a role in storing information odor, but also the transmission mode of odor can make visual communication behavior obvious. There was no significant difference in the size of acini between cats and dogs. Except rabbit, human parotid gland acini is the smallest; The acini of human submandibular gland is larger than that of rodent and smaller than that of other animals. There is no significant difference between animals and human except that the acini of sublingual gland of rabbit is obviously smaller and that of sheep is obviously larger.

1. Introduction

Adenoid cystic carcinoma of the salivary gland, accounting for approximately one of the malignant tumors of the salivary gland. One of the main reasons that malignant tumors cause great harm to the body is tumor invasiveness, that is, tumor cells leave the primary tumor and grow infiltrately into surrounding tissues, which is marked by tumor cells breaking through the extracellular matrix and basement membrane[1]. Based on the morphological characteristics of the cells and the physical properties of their secretions, salivary acinar cells were divided into serous acinar cells and mucinous acinar cells. The proportion of each component in different glands of different animals is different, and is affected by many factors inside and outside the body[2]. Gland atrophy may be caused by a decrease in the number or volume of parenchymal cells. At present, many researchers have established animal models to study the changes in the proportion of various glandular components and acinar size caused by age, hypoxia, fluid diet and other factors[3]. Adenoid cystic carcinoma also has the characteristics of neurophilic invasion, which often leads to pain, facial paralysis, lingual paralysis, numbness and other peripheral nerve damage symptoms or signs[4]. Because tumor cells are easy to grow along the nerves, it is difficult to grasp the surgical resection range. If the resection range is too large and all adjacent nerves are sacrificed, it will cause obvious dysfunction. If relevant important nerves are retained, tumor cells hidden in the nerves are very easy to cause recurrence, so the phenomenon of perineural invasion brings great difficulties to

clinical treatment[5].

2. Dog Habits

Dogs are gregarious by nature and have obvious hierarchical habits. They protect their companions and respect leaders. There is always a dog in the dog group who is in the leader's position and becomes the head dog. It leads the dog group to move, dominate and govern the dog group[6]. The leader position of the head dog is obtained through fighting. Usually, the head dog only allows himself to not allow the other dog to inspect his reproductive organs; Other dogs are not allowed to urinate in the place where they have urinated. Other dogs can shake their heads, wag their tails, be naughty or retreat, sit down or lie down in front of the head dog. Only when the head dog leaves can they stop. The smell of one dog can make another dog know the territory, sex, age and health of the dog. A piece of territory can only belong to one dog or a group of dogs. The aggressive behavior of a dog to protect its owner, protect its territory, defend its own safety, and strive for the dominance of the dog group is a normal aggressive behavior. For example, a stranger fights, quarrels or pesters with the dog owner. The dog stands up to attack a stranger, which is a normal aggressive behavior[7].

Dogs have the nature of defense. If their own safety is threatened, they will take aggressive behavior. This is normal aggressive behavior, but if innocent people are injured, it is abnormal aggressive behavior. In order to fight for the position of leader (the first dog) in the dog group, dogs and dogs will have aggressive behavior, which is normal aggressive behavior. It is a dog's instinct to accept the role of dominance and obedience, and it is also a dog's instinct to fight for the dominance of the dog group. Dogs are descendants of wolves, and barking is a behavior that dogs inherit from wolves, which is often used as a “language” to contact their companions[8]. As dogs have evolved to live with humans, barking has become a way for them to connect and express emotion. Dog is a kind of spiritual animal, with sensitive hearing, amazing smell and strong memory. It can establish feelings in the company of people and has a strong psychological protection for its owner[9].

3. Behavioral Analysis of Cats

The so-called communication refers to the process in which individuals release one or several stimulatory signals to elicit behavioral responses from recipients of the same or different species[10]. Animals produce various signals related to survival and reproduction and communicate with each other to coordinate their activities with other animals. Communication behavior plays a particularly important role in coordinating daily activities and forming social relations. Cats are dichroism visual system, largely nocturnal habits make them have contrary to human visual ability, under the condition of strong light, the pupil contraction of cats, less than one over ten of the human vision, in low-light situations, in order to receive the outside world more light, dilated pupils, vision is 6 times of mankind. When a cat's naturally agile female leads her cubs to walk at night and encounter danger, she will also raise her ears to show white, send warning signals to the cubs, and hide in advance, so that the survival rate of the cubs can be improved. The main odor sources of felines are feces, urine and gland secretions.

The size and structure of these chemicals vary greatly among species, indicating their functional significance in interspecific communication. The cat vocal library is classified according to whether the cat's mouth is open or closed when making sounds. According to spectral analysis, there are 23 kinds of cat voice patterns that have been explained so far, which can be divided into three types of calls, namely, tweeting or hissing, and mixed calls. Although most cats are solitary animals, they need close contact with the opposite sex when mating. During mating, the mating male and female

individuals groomed each other and met to show friendship.

4. Diet Habits of Cats and Dogs

The diet habits of cats and dogs The food composition of leopard cats is obviously different from that of canine predators. Dogs were carnivorous animals in ancient times, mainly preying on small animals. Under the domestication and long-term influence of human beings, pet dogs' eating habits have changed greatly, becoming omnivorous animals mainly eating meat. Some pet dogs even have a wide range of eating habits, including various meat, eggs, animal bone and blood, viscera and other animal foods, as well as products processed by various food crops, various beans and seeds, and various vegetables and fruits. Dogs have the physiological characteristics of meat eating. For example, canine teeth and molars are sharp and strong, which is conducive to biting and cutting. The content of hydrochloric acid in the stomach ranks first among domestic animals. The intestinal wall is thick, which makes it easy to digest meat, but they are not good at chewing. They “gobble up” when eating. The food habits of the two species are similar, but the food spectrum of canids is wider. The food niche overlap index of canines and ocelots in Yunmeng Mountain area was lower than that in the former area, and their niche widths were significantly different. In Wuling Mountain area, the overlap index of food niche was the highest and the niche width was the closest. However, in general, there is a significant difference between the food niches of canids and ocelots in this area, which shows that the niches of canids are wide.

Tissue is a complex three-dimensional structure composed of a large number of different types of interacting cell populations, which is an important obstacle to the analysis and comparison of normal and diseased tissues. Obtaining a single cell population from its natural tissue environment for molecular biological analysis is an important part of future medical genetics.

5. Study on the Salivary Glands of Cats and Dogs

Sublingual gland is the largest, submandibular gland is the second, parotid gland is the smallest. The size of submandibular gland and sublingual gland in pigs is not significantly different, while the acinar area of submandibular gland in dogs is larger than that of sublingual gland. There was no significant difference in the acinar area ratio between parotid gland, submandibular gland and sublingual gland. Except for rabbits, the parotid acini of other experimental animals were significantly larger than that of human parotid acini, and the parotid acini of dog and sheep were the largest. In the submandibular gland, the acinar area of rodents is significantly smaller than that of humans, and the acinar area of other animals is significantly larger than that of humans. In the sublingual gland, the acinar area of rabbit is significantly smaller than that of human. The acinar cells are pyramidal with round nuclei at the base of the cells. The cytoplasm is basophilic. There are more zymogen granules in the acinar cells of rabbit parotid gland, less in dogs, and no zymogen granules in the acinar cells of small cat parotid gland. The arrangement of parotid lobules in dogs is looser than that in other animals, and the volume of parotid lobules and acini in humans and small cats is larger. The number of serous acini in human and rhesus monkey submandibular glands was significantly more than that of mixed acini, and that of mixed acini in small cat submandibular glands was slightly more than that of serous acini. In the mixed acini, the “meniscus” composed of serous cells can be seen covering the surface of mucous cells in a hat shape. The average volume ratio of various components in the parotid gland is shown in Table 2. The average volume ratio of ductal system in parotid glands of various animals is similar to that of human beings, but the average volume ratio of acini is obviously larger than that of human beings, and correspondingly, the interstitial composition is less than that of human beings.

There are intercellular tubules between acinar cells. Myoepithelial cells are located between

acinar cells and basement membrane. There are a lot of myofilament, scattered mitochondria and rough endoplasmic reticulum in the cells. It may be due to the large area of mucous acini. The sublingual glands of most animals are mainly mucous acini, and the submandibular glands are mainly serous acini. The submandibular glands of dogs are mucous glands and the sublingual glands are serous glands. Its submandibular gland acini larger than the sublingual gland and parotid gland; The submandibular gland and sublingual gland of porcine are mainly mucinous glands, their size difference is not obvious, but still larger than parotid gland. The mean acinar volume ratio of sublingual gland is relatively larger than that of submandibular gland and parotid gland, which may be due to the lack of ducts, interstitium and large acinar area of sublingual gland.

The average duct volume ratio of submandibular gland is larger than that of sublingual gland and parotid gland, indicating that the duct of submandibular gland is well developed. Especially, the average duct volume ratio of rodent submandibular gland is significantly higher than that of other animals because the submandibular gland contains granular curved ducts and serous ducts. The average volume ratio of parotid gland, submandibular gland and sublingual gland was not significantly different in other animals except for parotid gland and monkey.

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