Evergreen Avian & Exotic Animal Hospital
Holly G. Carter, BVetMed
12930 NE 125h Way, Ste B130, Kirkland, WA 98034
Ph: 425-821-6165 Fax: 425-821-6130
info@evergreenae.com
www.exopet.com

Rat Medical Conditions

Adapted from "Sick as a Rat" by Cathy Johnson-Delaney, Critters USA, 2006

You've had your pet rat for about a year when you suddenly notice a change in behavior. Is it just a mood, or does it mean something more? Changes in behavior and grooming are often the first visible signs of illness. Changes in appetite, urination, defecation also may signify a medical problem. As a prey species, rats instinctively hold off showing illness until they are extremely sick. This means that subtle signs of change are extremely important.

Signs of Illness

A sick rat will often sit hunched, with fur unkempt, eyes partially or completely closed, and be reluctant to move. The rat may grind its teeth (bruxism) or tremble if in pain. Discharges of mucus or pus from eyes, nose, mouth or rear end are abnormal. Labored breathing, wheezing, or open-mouthed breathing are signs of respiratory disease. Porphyrin secretions ("red tears") may be present from the eyes and the nose, or staining of the forepaws from cleansing the face may be present. A lump or bump may be present anywhere on its body. Head tilt, bulging eyes, a urine-or feces-stained read end, limping, bleeding, or hair loss are also signs of a problem. By the time a rat stops eating and drinking, it is usually severely ill. Weight changes are often the first sign of problems in the adult rat.

One of the best ways to monitor your rat's health is to keep a record of its weight. Weigh a young rat at least weekly, and an adult rat (16 weeks or older) at least monthly. This can be done using a kitchen scale, in grams.

Adult rats should maintain a stable weight. Weight loss or gain can indicate illness. Use a scale capable of weighing down to a 1 gram increment. Weights measured in grams are more accurate to monitor health because ounce increments are too large. Postal or kitchen gram scales are inexpensive and one of the best investments you can make in your rat's health.

Start a notebook or calendar for tracking evenets in your rat's life, including weights, baths, noticed changes in appetite or urine/feces production, and other observations.

A change in weight or any of the other symptoms mentioned are significant to warrant a call to a rat-savvy veterinarian. But what do the symptoms mean? What types of problems do rats suffer from? The following list highlights seven of the most common maladies seen in pet rats.

Obesity

The most common problem seen in pet rats is obesity. Rats generally eat anything offered, so they easily become overweight. Junk food for people is junk food for rats. If your rat is on your shoulder while you eat a snack or meal, don't offer the rat everything you eat.

All people-food should be considered "treat food" and should be less than 5 % by volume of the total daily food intake by your rat. Acceptable people-food includes vegetables, fruits low in calories and high in fiber. Treat foods for rats should be what we consider diet foods for people.

Quantity is also important. A rule of thumb is a teaspoon of non-rodent block food per day per rat. If your rat is obese, consult with your veterinarian about an appropriate weight-loss program with the ideal end-weight. Restricting your rat to just rodent blocks may be all that is needed, but in many cases a slow reduction in total calories is needed.

Respiratory Disease

Several different causes of respiratory disease exist in pet rats. Many rats harbor one or more of the organisms involved in respiratory infections. Unfortunately, many pet rats have been exposed to these organisms as pups or during transport or time in a pet shop. Many carry the organisms for life with little problem. Most are transmitted between rats through aerosols (body fluids that filter into the air, such as urine, nasal discharge, tears, sneezing) and close contact.

Times of stress, weather changes, poor air quality or other illness may lead to the rat showing clinical disease. It is usually possible to control the symptoms but long-term problems and changes in the respiratory system may occur. It may not be possible to eradicate the various disease organisms. Treatment becomes management so that the rat is symptom free and has a good quality of life.

Mycoplasmosis: *Mycoplasma pulmonis* is an extracellular parasite similar to a bacterium. It causes rhinitis (runny nose, nasal inflammation), ear infections, laryngitis, tracheitis, bronchitis, bronchial collapse and lung abscesses. Rats may show sniffling, difficulty breathing, head tilt, weight loss, hunching, decreased activity and porphyrin staining. It passes between rats through aerosols and direct contact. Increased ammonia in the air due to urine build-up and wet beddings seems to aid in symptoms caused by this organism due to irritation of the respiratory system. Diagnosis is made through repeated cultures and blood tests (serology) for antibodies.

Corynebacterium kutcheri: This bacterium causes a disease sometimes called "pseudoturberculosis" although it is not related to the type of bacteria that causes true tuberculosis in humans. Many rats are carriers with no symptoms until stressed. Symptoms include difficulty breathing, discharge from eyes and nose, weight loss, hunched posture, lack of appetite, and occasionally head tilt, lymph node enlargement and preputial gland enlargement or abscess. This bacterium is passed between rats through the fecal-oral route rather than an aerosol. Diagnosis is made by culturing a

tracheal wash, which is done under anesthesia by putting some sterile saline in the rat's trachea and suctioning the fluid for culture.
Sendai Virus: This virus causes an acute respiratory infection. It frequently contributes to respitory disease caused by Mycoplasma and Pasteurella. Symptoms include rough hair coat, labored breathing and a markedly decreased appetite. Transmission between rats is through aerosols or direct contact. Diagnosis is made through antibody levels in serum samples when respiratory disease is present.

Pasteurella pneumotropica: This bacterium usually only causes problems when *Mycoplasma* and Sendai virus are also present. It then contributes to pneumonia, middle ear infections and conjunctivitis (inflammation of tissues around the eyes). Transmission is by fecal-oral route or from mother to infant in the uterus. Droplets from one symptomatic rat may also be infective to a cagemate. Diagnosis is through culture of secretions from the mouth, lungs, intestines or uterus. Note: this is not the species of *Pasteurella* that causes "snuffles" in rabbits. Rabbit pasteurellosis is due to *P. multocida*.

Cilia-Associated Respiratory Bacillus (CAR Bacillus): This bacterium causes chronic respiratory disease. It spreads easily between infected rats. Symptoms are similar to those seen with *Mycoplasma* infections and many rats have both organisms. Diagnosis is through serologic tests (blood serum) and special stains of tissue samples.

Bordetella bronchiseptica: This is a primary disease-causing bacterium in rabbits and guinea pigs, but in rats it contributes to respiratory disease when associated with *Mycoplasma* or Sendai virus. Symptoms include severe rhinitis and bronchopneumonia. It is transmitted through aerosols and direct contact.

Streptococcus pneumoniae: This bacterium is present in humans and many animals, although there are many different "serotypes". The serotypes that rats carry are usually not those that cause strep infections in humans. Rats are usually asymptomatic carriers of it in their nasal passages and inner ears. The infection is usually localized. During stress or infection with other respiratory agents, the bacterium may cause clear to opaque nasal discharge, porphyrin staining, head tilt, severe respiratory sounds and distress. Very young and very old rats are most susceptible. Diagnosis is usually made through culture of the organism from samples taken from the nose or trachea.

Treatment of Respiratory Disease

Treatment usually starts with antibiotics that can control Mycoplasma and the major respiratory disease bacteria. Once culture results are obtained, antibiotics sometimes need to be changed to better control the different organisms grown. No treatment exists for Semdai virus. Mycoplasma and others may be managed but likely never cleared fully from the rat. This is why rats have flare-ups of respiratory disease later after seemingly fully recovered. Most carry Mycoplasma for life. Management is the priority.

Supportive care includes housing in a warm, quiet environment with food and water easily accessible. They should only be handled for medicating, weighing, and for placement in a nebulizer if respiratory symptoms are severe. Additional medications may include bronchodilators, antihistamines, and a nonsteroidal antiinflammtory drug to ease the discomfort. Fluid therapy may be needed if the rat is dehydrated. Vitamins or

other supplements may be needed depending on the diet usually eaten and current inappetance.

Treatment may last for 2-4 weeks. Even though the rat seems to recover completely, symptoms may return at the next incidence of stress. Treatment will then be needed again.

If respiratory disease is from any one or more of the above organisms and is not controlled during each episode, the rat will become progressively worse and may die from chronic pneumonia.

Tumors

Rats more than 18 months of age are prone to develop tumors. These present as lumps and bumps in various places on the body. If not surgically removed, they can grow extremely large, the skin also can ulcerate, become infected and bleed. Some tumors do not seem to bother the rat until they become so large that they inhibit movement, while other tumors cause considerable pain and discomfort.

Surgery to remove superficial tumors should be done while the tumor is fairly small. Large tumors have larger blood supplies and require larger incisions and healing times.

To diagnose the type of tumor the rat has, a sample must be sent to a pathologist. Finding out what type of tumor the rat has helps to determine the degree of malignancy and whether or not the tumor may regrow or spread. Cancer therapy may also include medications depending on the type of tumor.

One of the most common tumors in rats arises from mammary tissue which is present in both the male and the female. Mammary tissue is present around the nipples, along the sides and up onto the backs and shoulders fo most rats. Tumors in this tissue are usually benign fibroadenomas, but may grow extremely large and tend to reoccur. Clinical evidence indicates that neutering and spaying the rats when they near adult weight (puberty) decreases the incidence or slows the onset of mammary tumor growth. Additionally, anti-hormone therapy following surgery possibly prevents further tumor development. If a rat had not been spayed or neutered that may be done at the time of tumor removal to decrease the hormone stimulation that promotes tumor growth.

Unneutered male rats older than 18 months commonly develop testicular tumors. Treatment requires removal of the testicles (castration, neutering).

Another common tumor of older rats, a pituitary adenoma, involves the pituitary gland. The presenting symptom is usually heat tilt. A slight bulging of the eyes may also be evident. Behavioral changes may exist and range from agitation and aggressiveness to marked sleepiness. Some rats may run in circles or stumble. Some may have problems chewing or grind their teeth. Occasionally a rat may just be found dead with no obvious outward signs. Diet seems to influence the incidence of pituitary tumors. Rats fed a high-calorie diet with food available all the time seem to have a high incidence of these tumors whereas those fed diets with restricted calories and protein have the lowest

incidence. Don’t supplement your rat’s basic diet with any treats of meat or other proteins or fats.

Dental Disease

Rat incisors grow continually. The molars do not. Rats sometimes damage or break incisors by chewing on cage bars or falling. If the pulp of the tooth is exposed, it may bleed a little and can be painful. If the tooth is broken at or below the gum line, the germinal cells that form the teeth may have been damaged, which will result in malformed tooth growth. During the time that teeth are short or missing, the teeth on the opposing jaw may overgrow, because they don’t have anything to grind against.

If your rat breaks or damages its incisors, your veterinarian will need to remove damaged pieces and trim the opposing teeth so that as all four incisors grow, they will meet appropriately. A high-speed dental cutting wheel and polisher are used to do this, with care taken not to cut the cheek or tongue. Never use toenail clippers on the incisors because they cause torque on the tooth, which may damage the germinal tissue and result in a malformed tooth as it grows.

Skin Problems

Pet rats rarely suffer from skin ectoparasites, although these are often listed in the literature for rat colonies. Rat fleas are rarely seen. Fleas from dogs and cats occasionally get on a pet rat, although the household infestation needs to be quite high for this to happen. Your veterinarian can best assess how to control the problem on all the pets.

Rat-specific mites and lice may cause hair loss, scratching, small skin wounds, inflammation and lack of thriving. These need to be diagnosed with a skin scraping and microscopic examination. Transmission is usually be direct contact.

Several species of mites that may infest rats may carry bacteria that can cause disease, not only to rats but also to humans. Any time hair loss, itching or skin irritation is noticed, take your pet to a rat-savvy veterinarian.

In some social situations, rats display barbering. This refers to one rat chewing or clipping the hair on another. Observe the rats closely (particularly at night) to determine which rat is doing the barbering and remove that individual from the group. Barbering usually occurs due to stress or overcrowding, but occasionally it is simply a sign of boredom. Environmental enrichment, increasing the cage size and decreasing the number of rats per cage, or by removing the offending rat will take care of the problem.

Dermatitis due to fight wounds may require medical treatment because the skin can become infected. Again, the pet owner needs to determine which rats are causing the problem and separate individuals that aren’t getting along. Infected skin itches, so a veterinarian will usually also prescribe medication to deal with the irritation as well as the infection.

Urinary Tract Disease

Pet rats get bladder stones and cystitis (bladder infection and/or inflammation) as they get older. Symptoms include straining to urinate, blood in the urine, and in rare instances the inability to urinate if a stone has caused obstruction. The presence of stones may show on an x-ray or on ultrasound of the bladder. Usually a urinalysis will also demonstrate bladder infection, inflammation and sometimes the presence of mineral crystals that may indicate stones or the possibility of stone development.

Treatment of cystitis is usually through antibiotics and anti-inflammatory drugs. If stones are present, surgery may be needed to remove them.

The major old-age disease of rats is chronic progressive nephropathy (CPN). The clinical signs will be kidney failure, weight loss and general lethargy. The exact causes are undetermined, although it seems to occur at an earlier age and progress more rapidly in males or in albino strains of both sexes.

The kidneys become irregularly shaped and lose function. Changes can begin in rats as early as 3 months of age. Diagnostic tests to determine kidney problems include blood chemistries, xrays, ultrasound and urinalysis. Treatment is geared to slowing and managing the kidney disease, often with fluid therapy. There is no cure.

Diarrhea

The most common cause of diarrhea in pet rats is overindulgence in inappropriate foods. Any diarrhea lasting longer than 8-12 hours can result in dehydration, abdominal pain and distress. Some types of bacteria that can be involved in diarrhea can even cause death, particularly in the very young or very old rat.

Tyzzer's Disease is frequently discussed in rat medical literature. It primarily affects young adults and is caused by the bacterium *Clostridium piliformes*. However, the clinical signs of lethargy, weight loss, distended abdomen and diarrhea are not specific for this disease. Many other types of bacteria, stress, foods, foreign body ingestion and disease problems can also cause the same symptoms. Consult your veterinarian if your rat develops diarrhea.

Who are you going to call?

One key to good health is learning to recognize signs of sickness; the other is knowing where to take your rat when it is ill. Pet rat owners need to find a rat-savvy veterinarian as soon as they become rat parents.

The veterinarian continues his or her education in small mammal medicine, subscribes to exotic pet journals, maintains a membership in the Association of Exotic Mammal Veterinarians (www.aemv.org), is a Diplomate of the American Board of Veterinary Practitioners – Exotic Companion Mammal, and has other specialized training and experience, and makes education materials or resources available to his or her clients. If you use a veterinarian for another pet, but he/she isn't experienced with treating rats,

ask for a referral to a rat-savvy veterinarian. A post-purchase or new rat examination is an excellent time to interview and choose a veterinarian for your rat.

Happiness through Health

In general, pet rats are hardy but will require some medical attention during their life span. Preventing obesity through a good diet, preventing stress through good husbandry, and good observations on your part will help your pet live a long and happy life.