

Fifteenth Annual Feline Symposium

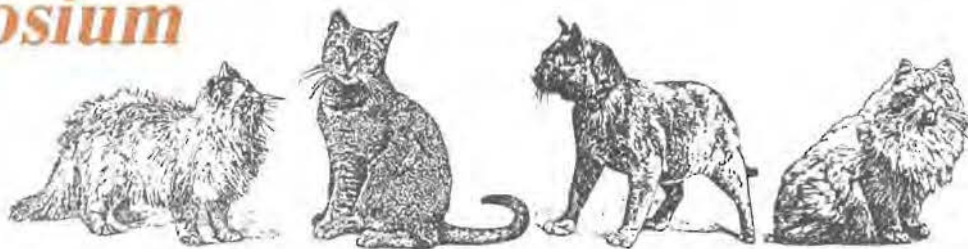
The Fifteenth Annual Feline Symposium was held April 11, 1992 at VHUP. More than 120 people attended, the largest attendance ever for the symposium. Following are the summaries of the presentations.

Common Feline Emergencies

Feline medical emergencies are typified by a unique set of injuries and illnesses, and cats have a tremendous ability to recover from most of them. Dr. Kenneth Drobatz, assistant professor of emergency medicine and chief of VHUP's 24-hour emergency services, discussed some common feline medical crises.

Trauma is a prevalent problem for urban cats. The most common accidents involve cats struck by cars or fallen from high-rise buildings. A study of the latter found that the most serious injuries occurred in cats that fell from between five and nine stories. Interestingly, cats that fell from more than nine stories generally experienced not as severe damage because they hit a terminal velocity while falling. Having stopped accelerating, they relaxed, and their muscles were not as tensed when they hit the ground.

The shock that often results from trauma is normally marked by labored breathing and poor blood circulation resulting from low blood pressure. Trauma victims are usually in shock, so practitioners normally assess airways first, and then check mucous membranes, which become pale with poor circulation. If a compromise exists, the patient may be given oxygen to assist breathing and IV fluids to increase blood pressure. Kidney damage, ruptured bladders and diaphragmatic hernias are commonly seen in accident victims. When a diaphragmatic hernia occurs, the diaphragm is no longer able to prevent the abdominal organs from slipping into the chest cavity. This slippage inhibits lung expansion, causing labored breathing. After the condition has been detected, normally by radiography, a surgeon will open the abdomen, pull back the abdominal organs and suture



the diaphragm.

Pneumothorax, leakage of air from the lungs into the chest cavity, is another accident-related complication which may cause lung compression. A cat suffering from pneumothorax is difficult to work with because it is experiencing difficulty breathing, so it is normally put into an oxygen cage immediately. Once calm, a needle may be inserted into the chest to draw out air.

Bite wounds are usually very treatable, but may close if not treated immediately, sealing in infection. Proper drainage to flush out bacteria is critical.

A practitioner will normally explore a wound to check for muscle damage, especially in dog bite cases. Dogs tend to shake their victims, so while a dog bite may appear minor, severe muscle injury may have occurred. If a bite has penetrated the abdominal cavity, the intestines may have been punctured, resulting in leakage of harmful bacteria. In this case, a surgeon will normally open the abdomen immediately to check for intestinal perforations.

Cats hide injury and illness very well, and cats that have been wounded often appear to be sound immediately following an accident. Their condition, however, may change rapidly, and they should be monitored at a treatment facility for 24 hours. Shock and brain swelling may occur several hours after the initial trauma, and pneumothorax may develop very slowly.

Cats' lives may also be endangered by serious medical emergencies unrelated to accident, Dr. Drobatz said. Feline urologic syndrome (FUS), which may manifest itself as urethral blockage, involves the formation of crystals in the urine. Urination becomes pain-

ful and labored, and urine may be slightly bloody. While plugs may form in the narrow urethras of male cats, obstruction does not normally occur in females.

Blockage is easy to diagnose by feeling the abdomen, which swells from urine build-up. Accumulation of potassium may result, which can cause cardiac arrest, seizures, decreased blood pressure and fluid build-up in the lungs.

Very treatable, FUS must be attended to immediately to avert serious consequences. Drugs are administered to counteract the effects of excess potassium on the heart, and IV fluids are used to increase the blood pressure. A urethral catheter will flush out the plug in about 99% of cases. If this cannot be achieved a perineal urethrostomy is performed, where the penis is amputated and the urethra widened.

Pyothorax is an infection in which pus accumulates in the chest. Respiratory distress, sometimes accompanied by shock, may occur. Treatment involves drainage of pus by tubes inserted into both sides of the chest. The pus is cultured, and the tubes are removed when the bacteria count drops sufficiently. The disorder is very treatable, but requires constant monitoring for such secondary conditions as pneumothorax.

Cardiac emergencies occur most frequently in cases of dilated cardiomyopathy, in which the musculature in the wall of the heart becomes very thin, preventing the heart from contracting normally, and hypertrophic cardiomyopathy, in which the muscles thicken, reducing the chamber size to such an extent that the heart may pump only small amounts of blood through it.

Cats with heart disease may experience respiratory distress, tachycardia, arrhythmias and sometimes hind leg paralysis, a very painful condition resulting from blood clots that migrate to the rear quarters. In most cases, feline



heart disease involves hypertrophic, rather than dilated, cardiomyopathy, but an ultrasound is required for accurate diagnosis. Once the condition has been determined, a diuretic and vasodilator may be administered, and the cat may be put into an oxygen cage to stabilize prior to further examination.

Because cats have a remarkable ability to hide severe infirmity, accidents and minor irregularities should receive immediate medical attention. Their hardiness, however, lends credence to the nine-lives myth, as they often overcome very serious ailments. J.C.

Feline Behavior: Understanding the Problem Cat

Feline behavior problems are almost as varied and complex as the factors which cause them, according to Dr. Karen L. Overall, lecturer in behavioral medicine, who runs the Behavior Clinic at VHUP. Dr. Overall profiled some prevalent feline behavioral disorders, particularly elimination problems, and she recommended ways to eradicate them.

Most of the 20-60 feline related phone calls the Behavior Clinic receives each week, Dr. Overall explained, concern inappropriate elimination. Many behavior problems not associated with elimination, such as aggression, in cats originate during key developmental stages, known as "sensitive periods." Onset of the socialization period occurs at about three to four weeks of age, at which time play and ample stimulation from people and other cats is critical. At about five weeks, they begin to develop predatory behavior, and at about seven weeks, they concentrate on their eye-paw coordination skills. Kittens continue to develop socially until about twelve to fourteen weeks of age.

Feline and canine developmental cycles should not be equated, as developmental periods in cats begin earlier and have shorter duration. If an owner fails to make available to a kitten the requisite stimuli during these

key stages, the risk of its developing behavioral problems associated with the neglected periods is greater. Dr. Overall summarized the results of a study, by Dr. Eileen Karsh at Temple University, which found that cats handled by human beings at earlier ages (two to seven weeks) were more comfortable with people in later life.

Normal feline behavior is also dependent upon early exposure to other cats. A kitten completely isolated from other cats until ten months of age becomes very hostile and cannot function socially. This may be a factor in problems often seen in early-weaned stray cats; because many of these cats were never taught how to play as kittens, as adults, they play in a very predatory manner.

Dr. Overall described the case of a client who brought in a stray cat that she spent every evening fending off. "Everything the cat did was in a predatory rather than a social context," Dr. Overall said.

Feline maternal nutrition is also a factor. If prepartum maternal nutrition is decreased by 50%, potentially common among urban strays, newborn kittens are often neurologically undeveloped. These cats are usually very aggressive, and tend to overreact to situations.

Whether expressed through "let-me-go-bites," furniture scratching or possessive behavior, aggression towards people and other cats is a common feline problem. In order to avoid actual confrontations, most cats give clear warning signs to discourage encroachers. Every cat owner should be familiar with these postural and facial signals in order to avert danger, Dr. Overall cautioned.

Commonly linked with anxiety, aggression can be precipitated by the presence of certain people or animals, as well as by such changes in household structure as death and divorce. While the owner is usually not the cause of the cat's problems, he or she may induce stress, which could exacerbate the cat. Chewing, howling and other anxiety responses may be controlled with such negative reinforcements as fog horns and water pistols, effective deterrents when used within 30-60

seconds of the onset of the behavior. However, if the cat is not exhibiting the behavior to get the owner's attention, anxiolytic drugs may be needed to treat the underlying problem.

Aggression can be coupled with elimination problems in the case of spraying, where cats mark their territories with urine. Research by a group in England and by Dr. Amy Marder at Tufts University found that in households of ten or more cats, the probability that at least one cat sprays at some point in time is 100%. Sometimes associated with mating and courtship, spraying is more common in males than in females, and seen more in sexually mature cats than in immature ones. Castration and spaying can greatly diminish the incidence of this behavior.

If a cat is urinating or defecating in areas other than the litter box in order to mark its territory, the owner must attempt to treat the aggression problem, as well as to interrupt the behavior with negative reinforcement as soon as it commences. Drug therapy may be successfully implemented to mitigate spraying and other unacceptable behaviors associated with aggression and anxiety. Benzodiazepines, such as Valium and Tranxene-SD, induce cessation of spraying in 60-90% of cases. Progestins are used with some success, and Buspirone (BuSpar), a new non-specific anxiolytic, has also been employed effectively.

By far the most common elimination problem is substrate preference, which reflects a cat's penchant for the feel of a rug, cloth, newspaper or other substance, which may be coupled to an aversion to the material in its litter box.

Following declaw procedures, many cats, having become partial to the softer materials placed in their cages at the vet, eschew the gritty substance in their own litter boxes because it hurts their toes.

It is important to realize that once a cat is put in a position of sampling a new substrate or location, it may never revert to a previous situation. Similarly, if a cat begins to eliminate elsewhere because of litter box filth,

blocked access or even proximity to a person or animal it dislikes, it may develop a location or substrate preference.

Location and substrate preferences can sometimes be combatted with the use of plastic, the feel of which most cats dislike. If a location preference exists, the cat's litter box should be temporarily moved to the preferred spot.

Elimination problems can also have a physical basis, so when a behavior problem is suspected, the practitioner normally tests first for physical illnesses; 50% of cats that visit the behavior clinic must undergo medical treatment for underlying physical problems that have caused their behavior anomalies.

Feline maladaptive behavior can seriously disrupt a household, and the owner should invoke the help of a behavior specialist should medical tests come back negative. Then, with a balanced dose of behavior modification for inappropriate behavior and praise for good behavior, accompanied by patience, experimentation and possibly drug therapy, a win-win situation may be attainable.

J.C.

Diseases in the Geriatric Cat

Older cats may experience any of a number of medical complications. Dr. Meryl Littman, associate professor and chief of medicine at VHUP, highlighted the disease processes, symptoms, diagnoses and treatments of three common disorders of geriatric cats - hypertension, hyperthyroidism and chronic renal failure.

Quite prevalent in older cats, **hyperthyroidism** is marked by excessive secretion of the thyroid hormone, thyroxine, which catapults the animal into a hyper-metabolic state.

According to Dr. Littman, 95%-98% of cats with hyperthyroidism experience weight loss, and most of them undergo appetite increase. There is an exception to every rule, however, and some may experience suppressed appetite.

Other signs include hyperactivity, panting, high blood pressure, rapid heart rate, heart enlargement, blood testing, murmurs and arrhythmias. Affected cats may also experience nausea, polydipsia - excessive thirst, and polyuria - excessive urination.

Diagnostic tests include palpation of the thyroid glands to check for enlargement, blood testing, thyroid scans

and thyroid biopsies when malignancy is suspected. Most veterinarians also listen for heart murmurs, arrhythmias and triple-beat gallop rhythms. Other cardiovascular tests include chest radiographs, EKGs, and echocardiograms. Practitioners may check the blood pressure and the retinas, which may show damage due to high blood pressure.

Standard serum tests - complete blood count (CBC) and chemscreen, which measures several chemical levels in the blood, are normally ordered, and a urinalysis, which may reveal low urine specific gravity, may also be performed.

T3 and T4 tests, which measure the amount of thyroxine in the blood, must be specially ordered. If the results are borderline normal, a more sensitive T3 suppression test may be done to make a final determination.

Several treatment options exist for hyperthyroidism. Drug therapy may include Tapazole or radioactive iodine in therapeutic doses, as well as antihypertensive drugs if needed. After stabilization, Dr. Littman said, T4 tests should be repeated every three months.

More common in male cats, **hypertension** may be a problem for elderly cats. In studies done at VHUP, the mean age of cats with the disorder was 15 years. Dr. Littman recommended diag-



Mrs. Edith Young and Mrs. Robert V. Clark, Jr., two enthusiastic supporters of the Feline Symposium, Dr. M. Josephine Deubler holding the rosette presented by the Morris and Essex Cat Club, and Mr. Richard Gebhardt, who judged at the benefit show.

Cat Show Raises Funds For Feline Programs

The Morris and Essex Cat Club, with support from the National Birman Fanciers, the Long Island Cat Club, and Purfect Persians, hosted a cat show on April 12, 1992 at the Penn Tower Hotel to benefit feline programs at the School. The organizers of the show raised \$1,902.49 for feline programs at Penn.

nosis of hypertension only in cases where the pressure exceeds 160/100mm Hg, to allow for situational anxiety that many cats experience when taken to the veterinarian.

When the blood pressure increases, vessels in the eye may burst. Retinal hemorrhage and detachment may cause one of the more serious complications of hypertension - blindness. The objective, however, is to stem further damage by recognizing ruptures before the cat goes blind.

In a study performed at VHUP, 41% of cats with elevated blood pressure experienced such neurologic signs as stroke, seizure and temporary limb paralysis. Other signs are renal failure and heart failure, which may be prompted by hypertension. Polydipsia/polyuria, weight loss, hyperthyroidism, nosebleeds, labored breathing and, in extreme cases, sudden collapse, coma and death, have been associated with hypertension.

Diagnostic tests include blood pressure measurements, ocular, thyroid and neurologic exams and blood work-ups. Veterinarians usually check for left ventricular hypertrophy, kidney shrinkage and low urine specific gravity. Chest and abdominal radiographs and ultrasounds are usually performed to monitor the heart and kidneys.

When a cat is diagnosed with hypertension, it is normally put on a low-salt diet, and diuretics are administered to facilitate salt excretion. Beta blockers, such as Tenormin and Inderal, and ACE inhibitors, such as Vasotec and Capoten, may be used to lower the heart rate. Anticonvulsive drugs may be prescribed if seizures have occurred.

Chronic renal failure is a fairly common problem for middle-aged and older cats. No breed or sex predisposition exists, and the average age of cats experiencing the disorder is nine years.

Many of the symptoms are similar to those of hyperthyroidism - weight loss, dehydration, low urine concentration and high blood pressure. Kidney shrinkage, anemia, vomiting and occasional appetite loss may also be present.

A complete blood work-up may show many of the signs of renal failure. The creatinine and BUN levels are elevated because the cat's detoxification system is impaired, and serum acidosis and elevated cholesterol may be present.

Urinalysis may show low urine specific gravity and/or excess protein. Veterinarians may order a urine protein creatinine ratio to determine urinary protein excretion levels. A cat that is experiencing chronic renal failure may also be tested for two diseases - feline immunodeficiency virus (FIV) and toxoplasmosis - which can affect the kidneys. Dietary regulation is one of the most important control measures for kidney failure. A low-protein diet may decrease serum BUN levels, probably high as a result of the kidneys' inefficiency in excreting toxic waste products from protein metabolism.

Cat owners may administer subcutaneous fluid injections to maintain hydration. Acidosis may be treated by giving affected cats sodium bicarbonate, and erythropoietin may be administered for anemia. Once stabilized, the cat should be checked by a veterinarian every two to four weeks.

Kidney transplants are not a usual form of treatment for cats with renal failure, as they may cause complications for both cat and owner. Kidney failure is a serious problem for cats, and the success of each individual usually depends upon its owner's

willingness to administer medications and prepare special meals. Euthanasia sometimes is the most responsible answer.

Cats should receive annual check-ups from birth; in later years, they should be seen twice annually, and every owner should prepare early for his/her pet's old age. At about seven years of age, cats should have complete blood work done, so that baseline levels can be established for comparison if the cat experiences geriatric complications in later years.

J.C.



Canine Symposium

The 23rd Annual Canine Symposium will be held on January 23, 1993 at the Veterinary Hospital of the University of Pennsylvania in Philadelphia.

Topics covered will be thyroid disease (Dr. Carole A. Zerbe), diseases of the geriatric dog (Dr. Meryl P. Littnan), canine behavior problems (Dr. Karen Overall), and ultrasound diagnostics (Dr. Mark Saunders).

The fee for the all-day program will be \$45; this includes lunch and parking. A detailed program and the reservation forms can be obtained by contacting Dr. M. Josephine Deubler, VHUP, 3850 Spruce Street, Philadelphia, PA 19104.

