Journal of Small Exotic Animal Medicine 2(3)137-140

REVIEWED ARTICLE

Practical tips in nursery rearing of exotic cats

Rita McManamon, DVM; Gail Hedberg, AHT

Abstract

Although environmental condition and prenatal care for exotic cats is designed to promote proper maternal care, veterinary intervention or hand-rearing may occasionally be necessary. Nursery rearing of exotic carnivores is an art as well as a science; practical experience and a "sixth sense" about the animal's condition is often just as important as medical expertise. This paper focuses on teamwork between veterinarian, technician, and lay personnel, and a consistent, practical approach to husbandry and problem-solving.

Introduction

Detailed discussion on hand rearing of exotic carnivores, including treatments for specific neonatal medical conditions, has been published by Hanes,[1] Meier[2] and others. When dealing with felid neonates, the veterinary practitioner is able to make educated,

Color photo reproduction for this page sponsored by Pet Ag, Inc., and Zoo Logic Diets.

1. Zoo Atlanta, 800 Cherokee Ave. Atlanta GL 30315
2. San Francisco Zoological Gardens, 1 Zoo Road, SF, CA 94132

objective observations and physiological assessments to ensure a balanced diet and to detect and treat diseases. At the same time strict reliance on medical training can sometimes lead experienced clinicians astray. Some commonly observed symptoms may be mistakenly ascribed to infectious disease etiologies rather than to husbandry techniques inappropriate to the changing needs of the growing animal. Exotic animal specialists are frequently consulted after a succession of diets or antibiotic therapies failed to correct abnormal symptoms.

While the veterinarian is an essential member of the hand rearing team, many experienced lay caretakers can assess and correct some problems even if they do not fully understand the physiological or medical etiology for the observed symptoms. Often, medication is not required during hand rearing if strict attention to detail and hygiene is established. Therefore, the most successful practitioners combine common sense with medical knowledge, and work in partnership with experienced rehabilitators and technicians to assure that the most common neonatal problems are avoided or resolved. When problems do require prompt medical intervention, success may then be more quickly achieved.

Some serious medical conditions (dehydration, colibacillosis, Salmonellosis, coccidiosis, etc.) can occur and should not be overlooked. If exacerbated by suboptimal hand rearing techniques, the animal's condition can deteriorate rapidly. Standard treatments, detailed in the exotic animal medical literature[2,3] or extrapolated from domestic animal medicine, are usually appropriate. However, in the author's experience, the vast majority of problems are related to diet, humidity, or other husbandry issues, and noninfectious causes of gastrointestinal upset. A return "back to the physiological basics" is always advisable. Diet and/or medication should be kept as simple as possible.

Upon initial presentation, the animal's medical condition must be rapidly evaluated. The following discussion assumes that the animal is generally healthy, and that standard neonatal treatments (such as umbilicus care) have been performed. The presence of adequate nursing and colostrum intake, plus hydration and systemic immunoglobulin status should be assessed through evaluation of standard hematocrit and serum or plasma protein levels. Subcutaneous oral, or intravenous injections of maternal or conspecific serum have been helpful in some neonatal carnivores[3] although the efficacy of such treatment in exotic felids has not, to our knowledge, been proven. Even if 36 hours have passed since birth, oral administration of serum or colostral antibodies may theoretically provide local gut protection.

Taking the initial weight is critical and daily weights (taken consistently before feeding) provide essential information for several weeks. The practitioner cannot accurately judge whether correct amounts are being fed, nor detect medical problems early, without consistent and through record-keeping (see Table 1.).

Because the neonate has limited thermoregulatory abilities its warmth and suckling ability should be assessed. If it has not been nursing regularly, or is chilled, it should not be given complete formula at first. Judicious use of sterile warm fluids orally and per rectum are efficient ways to raise core body temperature and will stimulate proper GI function. Providing small drops of warm electrolyte solution with a finger allows care giver or veterinarian to judge the strength of the suckling reflex. The speed at which oral fluids can be given should be adjusted to the suckling ability of the neonate; it is much better to provide frequent small feedings and to gradually increase the amounts. Hypoglycemia is another reason for low body temperature and/or poor suckling response. When proper absorption is likely, subcutaneous fluid therapy including 2.5% dextrose has been helpful in our experience.

The time commitment in hand rearing exotic felids can be considerable, especially during teething or other periods that require 24 hour monitoring and frequent small feedings. The animal should have no contact with personnel that are handling other carnivores, domestic or exotic, in order to prevent potentially fatal viral and bacterial disease transmission. At the same time, the actual number of persons involved must be kept to a minimum to maintain consistency and hygiene, observation, and record keeping. Most cubs do not tolerate changes in feeding techniques, so communication between team members is critical.

Some basic requirements

Most neonatal carnivores require a humidity level of 40-60% and an initial incubator temperature of 85-90°F. This temperature must be lowered gradually over the next 10 to 14 days, as the animal begins to regulate its own temperature. Soft washable bedding is helpful, and should allow the animal to burrow under light layers or lie on top. Daily rectal temperature readings are useful, but excessive rectal stimulation can be irritating. Behavioral indications of hyper or hypothermia are therefore important clues. The animal's sleeping position

should be noted before disturbing it. The neonate may burrow deeply, sleep tightly curled up (hypothermia); stretched out comfortably with normal dreaming and suckling movements (normothermia); or lay fully stretched, panting with the nose/mouth near air vents, (hyperthermia). Fussiness, sweating, and diarrhea often indicate hyperthermia; gassiness and constipation can indicate hypothermia. Eventually, the animal will no longer tolerate the confines and restricted air flow of the incubator and must be moved to a larger but warm environment. A large pen, with an open airline-type kennel, will provide the animal with a sense of security and refuge. Single cubs in particular, may be hypersensitive to sounds during this transition. The area should be furnished with removable, washable, thick fleece pads and surfaces. Fleece and towels can be sewn into tubular shapes to mimic the maternal arms and legs on which the cub would normally rest, and the sides of the pen may need covering to prevent hair loss from rubbing. Safe, moveable and chewable objects should be provided to allow the animal to explore and develop coordination and muscular skills.

Choosing the proper diet is a subject of considerable controversy and based largely on individual experience of the caretaker. There is a wide variation in the calculated maternal milk composition of various felid species.[2] Either KMR® or Esbilac® have been used by many caretakers, and the proponents of each have usually had poor experiences with the other formula (usually diarrhea, gas, or constipation).[5] In the first author's opinion the problems are probably due to experience level and subtle husbandry factors rather than to specific nutritional grounds. Alternatively there may be more subtle variations in species requirements that are not easily identified using proximate analysis techniques. Choosing and obtaining experience with one formula is likely to be more successful than switching. Growth patterns will necessitate changing the formula gradually, and simplicity is paramount.

The authors have successfully used Esbilac®, supplemented with taurine and a multivitamin, for exotic cats. When raising tigers, taurine requirements are provided by adding one teaspoon per cat per day of clam juice, or one chewable taurine tablet (250 mg) per cat per day. Progress in infant diet formulation and nutritional analysis is continuous, and some other recent commercial formula preparations may also have applicability to exotic felids. As in the past, successful diet choice can only be made with open communication and shared practical experience. It is always advisable to seek out current recommendations through commercial infant milk suppliers, experienced rehabilitators, or zoo professionals and nutritionists. An infant diet handbook reviewed by zoo nutritionists, is currently being updated by the American Association of Zoo Keepers.

The authors routinely give a daily oral multivitamin supplement (with folic acid and iron), with a dosage extrapolated from domestic animals. Lactobacillus culture such as Bene-bac® may be advisable, especially for animals that require antibiotic therapy. Rarely, animals may develop lactose intolerance, and pretreatment of formula with lactase may be necessary.

Strict hygiene is critical. Nipples, bottles, and utensils are boiled before feeding and after cleaning. Only one days worth of formula is prepared in advance. The size of the nipple is critical in order to avoid aspiration of formula, nipple collapse, or plugging. We have been most successful using preemie nipples, and nursing is more consistent when the same nipple is used. When rearing more than one animal, each animal should have one particular nipple designated for use throughout the bottle feeding process. Often, individual animals develop preferences for a particular texture or stiffness, and consistency will promote better feeding.

Felids are especially strong sucklers, and it is best to have the animal feed more slowly and take several breaks to avoid excessive gas intake. Switching to a firmer nipple will provide a longer and more satisfying feeding bout.

The animal must be positioned sternally during feeding. The caretaker should train the animal to point away from him/herself, and to knead a rolled towel, to avoid problems in the future. A cute neonate soon becomes a demanding, potentially dangerous wild animal, and liability/safety issues are important.

"Burping" after feeding, or perineal stimulation, should all be performed in a safe manner. Gloves and/or long sleeved clothing are helpful in avoiding injury. Regular stimulation to induce urination and defecation is critical, and is performed with a warm, wet cotton ball or soft towel. A circular motion around the perineal area helps to stimulate excretion without rectal irritation. Excessive stimulation can irritate the perineum; topical application of mineral oil, vitamin A and D, or triple antibiotic ointment to the area may help. Stimulation at least twice daily must continue for some weeks after the animal develops rudimentary bladder/rectal control.

Our approach to calculating amounts to feed is simple, and involves computing the total desired daily intake and dividing by the desired number of feedings per day, while taking care not to exceed the feeding volume of 30-35 cc/kg. In our experience, this volume is less likely to cause over distension of the stomach. Thus, accurate daily weights are essential to ensure that diarrhea (or constipation) are not being caused by over- or underfeeding. Total daily intake goal should be 15-20% of the body weight, but this may need adjustment based on quantity and quality of stool. Exceeding 18% often results in diarrhea. Ideally, there should be six feedings per 24 hours (with a six hour rest period at night) until three weeks of age. Five daily feedings (with rest) are usually adequate from three to six weeks; four feedings from six to nine weeks, and three feedings from nine to sixteen weeks.

Adjusting the diet to the growing animal.

As the neonate develops, with normal response to a milk diet, the amount and quality of stool, combined with the daily increase in weight, will detect when additional sources of protein are to be added to the formula. By gradually increasing the caloric content of the diet in this way, and keeping the actual volume of fluid per feeding lower, the chances for diarrhea are decreased and the animal is more satisfied and will sleep more soundly between feedings. One to three teaspoons of dry rice baby cereal per feeding are added initially. Weaning usually begins around the 8th week; the transition to a meat-based diet is begun by adding one to three tablespoons of chicken baby food. Gradually, the amounts of baby food are increased and the youngster is slowly switched to canned feline diet. Milk is usually eliminated by four months. Two feedings per day are given from 16 weeks to six months of age and daily feeding is adequate thereafter.

Avoiding problems and presenting solutions.

It is important to realize, however that the individual's medical problems (if any), teething pain, social situation, species and other factors will influence whether the animal will cooperate with the ideal feeding plan. The teething period is especially stressful and may require 24 hour care. Symptoms of vomiting, gassiness, diarrhea and/or constipation, are frequently seen in some species, and can mimic other serious medical problems. Patience and frequent small feedings are often necessary. Diluting the formula with pediatric oral liquids (e.g.: Ricelyte®) temporarily, and then gradually returning to the normal formula, can replace fluid loss from vomiting and diarrhea. It is best to avoid the use of medication, as experience has occasionally implicated side effects from the use of children's buffered aspirin (even with doses extrapolated from kittens), or from topical anesthetic teething gels. The use of human teething rings or soft chew toys (especially when refrigerated) often provides relief.

Vaccines (using killed vaccine only) against panleukopenia, calici and feline viral rhinotracheitis should begin at three weeks and continue every two weeks until 16 weeks of age. Certain species (e.g. cougar) may require other vaccinations such as FeLV.[2,6]

Successful felid neonatal care is a challenging but rewarding experience, and demands many skills from the practitioners' biological knowledge and experience in order to achieve the desired goals.

Acknowledgments:

The authors would like to thank their numerous professional and lay co-workers, who have so generously shared their hard work, experiences and theories on exotic carnivore neonatology, and thus contributed to our knowledge and this paper.

Products mention in text.

a.KMR® Pet-Ag, Inc. Hampshire, IL. 60140

b.Esbilac® Pet-Ag, Inc., Hampshire, IL 60140

c.Bene-Bac® Pet-Ag, Inc., Hampshire, IL 60140

d.Ricelyte® Mead Johnson Nutritionals, Evansville, IN 47721

References:

1. Hanes, P. C., Rehabilitation notes: Bobcat. Wildlife Journal, Vol 14, No 4, Pg. 9-19.

2. Meier, J. E. Neonatology and Hand Rearing of Carnivores. In: M. E. Fowler, Zoo and Wild Animal Med. 2nd Ed. W. B. Saunders, Phila, PA Pp. 842-852.

3. Meier, J. E., and W. Sanborn. 1982. A preliminary report on the management and treatment of Salmonellosis with trimethoprim-sulfamethoxazole in an exotic animal nursery. J Zoo Anim Med. 13:26.

4. Meier, J. E. Collection, preparation, storage and use of IgG in exotic neonatal animals. Proc An Meet Anim Assoc Zoo Vet. 1978. Pg 126-138.

5. Davidson, A. W., and W. C. Satterfield. 1974. Esbilac® and KMR® - a comparison of two commercial formulas in bottle raising black leopards *Panthera pardus* J Zoo Anim Med. 5:17.

6. The Merck Veterinary Manual, 7th Ed. Merck & Co., Rahway, NJ.

The Journal of Small Exotic Animal Medicine would like to thank Pet Ag, for its support of the Journal by sponsoring a page of color illustrations to accompany this article. Their support of the Journal indicates their interest in furthering veterinary advances in exotics, by recognizing this small but growing field.