ABSTRACTS

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Contraception and monitoring methods in wild carnivores

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Almost every AZA (Association of Zoos and Aquariums)-accredited zoo in North America uses contraception to manage reproduction. The reasons for contraception include genetic management to prevent inbreeding and equalize founder representation and to prevent production of more animals than can be properly cared for. Implicit in these objectives is maintenance of natural social groups to enhance animal well-being. Contraceptive use began formally in 1975 in lions and tigers, using silastic implants containing melengestrol acetate, a synthetic progestin (5). Later, medroxyprogesterone acetate (Depo-Provera®) use was added because of the advantage of delivering an injectable by dart. Efficacy of the synthetic progestins approached 100% although reversibility was lower, e.g., 62% for tigers (3). Of greater concern was the uterine and mammary pathology found in wild felids treated with these progestins (4). In the 1980’s and 90’s progestin contraceptive use had expanded to wild canids and other carnivores as well as to other felid species, raising the concern that they might also be at risk.

Alternative contraceptive methods available in the 1990’s that might be considered for carnivores included birth-control pills, which offered no advantage, because they contain synthetic estrogen in addition to progestin, a combination associated with an even higher risk of pathology in domestic dogs and possibly other carnivores (1). Porcine zona pellucida (PZP) vaccine, used extensively in ungulates, has been associated with serious side effects in cats and dogs, making it inappropriate for wild carnivores. The GnRH agonist implant Suprelorin® (deslorelin), which became available in the late 1990’s, was promising for wild canids and felids, in particular, since it had been developed for domestic dogs and also had been tested in domestic cats.

In 1998, the Contraception Center established a multi-center trial of Suprelorin in wild carnivores in AZA zoos. Since then, 355females of 38 carnivore species have been treated with this GnRH agonist. The product has proven very effective, although the dose needed for suppression of reproduction varies by species and by individual. Duration of efficacy has been even more variable, so much so that in some individuals it might be considered non-reversible (2).

An emerging problem has been an increase in reports of pyometra (a potentially fatal uterine infection) in wild canids, associated in many cases with Suprelorin treatment. To investigate any association, we conducted a retrospective analysis of medical records and pathology reports from more than 1000 female canids of seven species managed in zoos (African wild dog, bush dog, fennec and swift foxes, and red, maned, and Mexican gray wolves), 69-275 females per species. We included endometrial hyperplasia (EH) in the analysis, since it is often a precursor to pyometra. Results showed the highest risk to be associated with the number of years treated with Suprelorin alone, intermediate risk with number of years not reproducing but not contracepted or with number of years treated with progestin (MGA) implants, and lowest risk with number of years giving birth or with number of years treated with Suprelorin plus megestrol acetate (Ovaban®) pills for 2 weeks around the time of implant insertion to prevent the initial stimulation phase.

Pyometra is of concern because it can be life-threatening and typically is treated by removal of the reproductive tract, preventing reproduction in potentially genetically valuable females. EH is also of concern because not only may it predispose to pyometra but in itself can interfere with fertility, also compromising captive breeding programs. We are testing a minimally invasive, transcervical endometrial biopsy technique to diagnose EH with the hope of developing approaches to reversing the condition.