The Problem Stud Dog

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• Canine • Male infertility • Testicle • Spermatogenesis

Infertility may present as failure to produce pregnancy after mating, inability to mate or ejaculate, abnormalities of the spermiogram, clinical disease of the genitourinary tract, or physical defects in the reproductive tract. In some cases, infertility may progress slowly while in others onset of signs may be rapid. Male factor infertility is implicated in as many as 40% to 50% of cases of pregnancy failure.[1] Thorough history-taking, physical examination, semen collection, and evaluation, followed by appropriate diagnostics, will often yield a diagnosis. In some cases, treatment may be possible, but in many cases, no specific treatment is available, making careful and detailed breeding management of both the dog and bitch the mainstay of successful outcomes.

HISTORY

On presentation, a careful and thorough history is essential and should include general information, including age; kennel environment and living conditions including housing surface consistency (concrete, rocks, hardwood, etc); complete travel history; nutritional data including brand of dog food and any supplements administered; history of exposure to any person using topical steroid patches or creams; medications administered currently or previously; deworming history (dates and products used); prior health issues or concerns, including any immune mediated disorders; allergies; and genetic testing that has been completed along with the results of such testing.[2–5] Further detailed information about reproductive history should include: number of littermates (include number intact and if they have been used successfully for breeding); number of prior breedings; types of breedings performed; types of semen used either successfully or unsuccessfully; parity of bitches to which the dog was bred; age of bitches that were bred; if the bitches were confirmed pregnant and if so how; number of pups in each litter; chronologic history of semen evaluations and any history of hemospermia or pyospermia; prior diagnostics or treatments for infertility, including semen cultures; previous prostate exams (digital and ultrasonographic) and findings; history of urinary tract signs; history of

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constipation or ribbon-like stools; lameness problems, particularly hindlimb or back pain or injury; changes in scrotal size; any history of scrotal trauma or injury; and prior *Brucella canis* testing (type of test and dates performed).

PHYSICAL EXAMINATION

A complete and thorough physical examination should be performed.[2–5] This should start with general body systems paying careful attention to the nares and eyes for signs of abnormality in vision or olfaction; heart for arrhythmia or murmur; lungs; abdomen; pulse quality; peripheral lymph nodes; musculoskeletal system for signs of pain, swelling, lameness (paying careful attention to the lumbosacral spine and hind limbs); skin for signs of endocrine disease or atopy; and the neurologic system. A detailed examination of the reproductive tract should follow, including visual examination of the external prepuce and mucosal surface of the penis (both before and after erection) and a digital examination of the prostate for location (pelvic or abdominal), size, shape, symmetry, and pain. Examination of the scrotal contents includes examination of the scrotal skin for thickenings, alopecia, edema or masses; assessment of the vaginal cavity for fluid accumulation; palpation of the testicles for size, shape, tone, presence of masses or softening (focal or diffuse) and pain; and palpation of the epididymides and spermatic cords for enlargement, hypoplastic or aplastic regions, or pain. Measurement of total scrotal width can be performed with calipers or via ultrasonography.

SEMEN COLLECTION AND EVALUATION

Semen should be collected in the presence of an estrus teaser bitch whenever possible.[1,2,5,6] If a teaser is not available, the use of vaginal swabs from a bitch in heat, or estrus bitch urine may be applied to a non-cycling bitch. The dog's libido, ability to develop a normal erection, and mounting behavior, with character of pulsations and thrusting associated with ejaculation should be noted. The ease of which erection develops as well as the ability to develop and complete erection should be assessed. The prepuce should be cleaned prior to collection to remove any smegma present. The ejaculate should be fractionated if possible; but if not, then the approximate volume of each fraction should be noted. Fraction 1 is prostatic fluid, which clears the genitourinary tract of urine and debris prior to collection. As minimal an amount of fraction 1 as possible should be collected. The volume of fraction 1 is typically 1 to 4 mL. Fraction 2 is the sperm-rich fraction and may be 0.1 to 1.5 mL. Fraction 3 is prostatic fluid and may range in volume from 1 mL to 80+ mL. When prostatic disease is suspected, cytologic evaluation of a sediment of the third fraction will allow for characterization of this fluid.[3,7,8] Culture for aerobes, *Mycoplasma* spp and *Ureaplasma* spp may be performed if inflammation (acute or chronic) is suspected.

Semen evaluation should include volume, motility (total and progressive), velocity of forward progression, concentration/mL, total sperm/ejaculate, and morphology.[1,2,5,6] Sperm longevity can be evaluated every 24 hours after extending semen at a dilution of at least 3:1 in any of a variety of commercial extenders. Use of computer-assisted sperm assessment (CASA) for semen evaluation has been reported[1] and validated for canine sperm motility assessment while its use for evaluation of sperm morphology is still being investigated at this time.[9] Sperm concentration can also be determined with a hemacytometer or densimeter. Semen morphology is normally performed using stained slides (eosin-nigrosin, Wright-Giemsa) and oil immersion (×100) or with Formol-buffered saline or glutaraldehyde-fixed sperm and phase contrast or differential interference contrast