

MALE DOG INFERTILITY: MANAGEMENT IN PRACTICE



Xavier LEVY, DVM, ECAR dipl.
Centre de Reproduction des Carnivores du Sud Ouest
Banque de Semence Canine Française
www.vetreproduction.com
vetreproduction@gmail.com







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Infertility – Owner/Breeder questions

- "My male produces few or no puppies »
- "My male doesn't want to mate »
- "My male can't mate »
- "My male doesn't lock the bitch »

- Is it his responsibility?
- Is it sterile?
- Why is it sterile?
- When will he be able to reproduce?

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OUR QUESTIONS



UNDERSTAND THE SITUATION




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UNDERSTAND THE SITUATION



- Has it ever reproduced?
→ Yes: infertility acquired a priori
→ No: ?
- Pregnant females before and after him ?
→ Yes: probable infertility
→ No: perhaps not related to the male
- At what age did the problem start?
→ Always: poor prognosis – congenital
→ Adult: acquired - ?
→ > More than a year ago: unfavourable prognosis
- How many mating/AI without pregnancy?
→ > 2: significant
→ 1: ?
- Were there any mating seen in person?
- Who did the semen collection for AI? Was a spermogram performed?

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UNDERSTAND THE SITUATION

- Size of her litters
→ Gradual decrease: Intercurrent disease
→ Sudden stop: Acute illness / accident / ...
- Recent illnesses - During growth
→ Fever in the last 3 months
→ Systemic disease
 - ▶ Immunosuppression
 - ▶ Hormonotherapy
 - ▶ Antifungal

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Young adult sterile?




- « Guerlain », Bernese Mountain Dog, 1.5 years old
- 2 mating, 2 empty bitches
- Spermogram
→ Medium libido but shy dog
→ 230 million spz, progressive mobility 40 %,
→ Abnormalities > 60%





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Young adult sterile?



- Spermogram
 - Medium libido but shy dog
 - 230 million spz, progressive motility 40 %,
 - Abnormalities > 60%
- Dog suffered from non-erosive polyarthritis.
 - Corticoids in decreasing doses from the age of 6 months.
- Under-developped testis

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UNDERSTAND THE SITUATION

- Other affected animals in the kennel
 - Yes: group illness / management failure (nutrition, time of mating/AI, etc.)
 - No: ?
- What analyses have been carried out?
 - Nothing
 - Spermogram
 - Hormone analysis
 - Genital Imaging
- What treatments?

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ASK ABOUT GENETICS

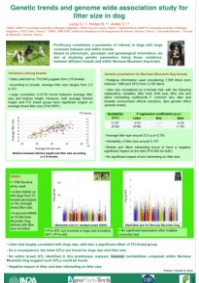
- Breed
 - Premature alteration of spermatozoa
 - ↳ Labrador retriever, etc.
 - Lack of libido
 - ↳ Saint Bernard, Naple maltese, Persian, etc.
- Lineage
 - Ascendants: Prolificity and Pregnancy Rate
 - ↳ Inheritability of 6-10% for prolificity (Leroy et al. 2014)
 - Collaterals: brothers and sisters
 - ↳ Hereditary
 - ↳ Congenital: treatments or diseases during pregnancy...

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ASK ABOUT PRACTICES

- Inbreeding rate
 - > 0.125 - 0.558: drop in performance?



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"Cisco", 24 months old, naked crested Chinese dog



- 3 mating without pregnancy
 - 2 multiparous bitches, 1 nulliparous
- Good libido
- Sample: cloudy whitish


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"Cisco", 24 months old, naked crested Chinese dog



- Spermogram:
 - 190 million,
 - Progressive motility 40%,
 - Abnormalities > 60% (mostly midepieces)



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- Spermogram:
 - 190 million,
 - Progressive motility 40%,
 - Abnormalities > 60% (mostly midpieces)
- When look at the breeding results of the lineage in the world:
 - Litter of the ancestors 2 to 3 puppies
 - ▶ **breed frequently > 5**
 - 1 brother without puppies and 1 sister without puppies
- Prognosis: Very poor
 - After reflection breeder prefers to let go

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LIBIDO AND MOUNTING

[A thick blue horizontal bar is positioned below the title.]

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3 distinct males unable to mate



- 3 year old greyhound
 - Begins to get excited and have an erection but stops quickly before penetration by complaining
- German Shepherd 6 years old
 - Begins to get excited and erect but stops quickly without complaining
 - Ditto when sampling: phase 1 harvested but no phase 2 and 3
- 4 year old Rottweiler
 - Begins erection but stops quickly

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Lack of libido: etiology

- Repeated reprimands for unwanted matings
 - By the owner
 - By the bitch!
- Idiopathic
 - Hereditary? Social development ? Etc.
- Climatic conditions and breed
 - Mainly in very warm summer period
- Decreased olfaction
 - Decreased libido and kennel cough
 - ▶ **Put to reproduction? Experimental study only**
- Gonadotropic axis insufficiency
 - Not demonstrated in dogs



Meyers-Wallen V. Clinical approach to infertile male dogs with sperm in the ejaculate. Vet Clin North Am Small Anim Pract 21:3, 1991

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Lack of libido, what solutions?

- Mating at bitch cycle optimal time
 - 2 to 3 days post-ovulation
- Mounting without the owner's presence
 - In a quiet room, without other dogs
 - Territory of male or neutral, but not of female
- Hormonal stimulation
 - Suprelorin 4,7® (desloreline) : 2 to 3 days before mating/collection
 - Cystoreline® (gonadoreline) (3.3 micog/kg IM)
 - ▶ **5-day of testosterone rise**

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SEMEN ALTERATION

ASPERMIA - OLIGO - ASTHENO - TERATO-SPERMIA



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ASPERMIA AND OLIGOSPERMIA SUSPICION

- Incomplete sampling +++
- Prostatic diseases ++
- Retrograde ejaculation (rare)
 - impaired adrenergic innervation
 - cystitis / urethral stones
 - Trauma / post-surgical stenoses
 - compression of the urethra into the prostate gland



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ASPERMIA AND OLIGOSPERMIA WHAT TO DO?

- Repeat the collection ++
 - With a teaser bitch if available
- Observe carefully the contractions of the penis and the attitude of the dog during sampling.
 - ▶ Check that the dog is not distracted and does not pause between the 1st and 3rd phase.



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ASPERMIA AND OLIGOSPERMIA WHAT TO DO?

- General clinical examination
 - Scrotal scar
 - Testis atrophy, induration
 - Epididymis thickness
- Urine analysis
 - Spermatozoa
 - Crystals
 - Cystitis: leucocyturia, etc.
- Genital ultrasound
 - Prostate – Testis – Epididymis – Lymph nodes



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AZOOSPERMIA SUSPECT

- Deferent duct occlusion
 - Post-inflammatory
- Vesico-sphincter dyssynergia
- Spermatogenesis arrest
 - Post-inflammatory or infectious: Brucellosis, etc.



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AZOOSPERMIA WHAT TO DO?

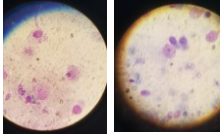
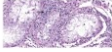
- Confirm epididymis collection in the ejaculate
 - ALKP must be >> 5000 to 40 000 IU/L
- Uro-genital ultrasound
 - Epididymis
 - Prostate
 - Bladder-uretra
- Infectious agents soundness
 - PCR on sample and/or serology
 - *Brucella canis*, etc.



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AZOOSPERMIA WHAT TO DO?


- Testis anatomo-pathology
 - Testis FNA
 - ▶ 18 or 20 G
 - Biopsy-punch

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"Max", German sheperd, 3 yo




- Two unsuccessful mating
- Semen collection: azoospermia
- Normal libido
- Contraction of the penis muscle at time of collection
- Clinical exam
 - No abnormality

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- Para-prostatic diverticle with all the semen
- FNA semen collection and AI
 - Pregnant bitch 11 puppies





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ASTHENOZOOSPERMIA SUSPECT

- Problem with collection equipment
 - Detergent
 - Very cold glass tube or microscope plate
- Urine contamination at time of ejaculation
 - Very excited male hours or days before collection
- Inflammation of the lower urinary tract
 - Prostatitis
 - ▶ Prostatic fraction alteration: pH, osmolarity, etc.
 - Urethritis-cystitis
 - ▶ Urine contamination





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ASTHENOZOOSPERMIA WHAT TO DO?

- Repeat the collection 1 hour later
 - Increase aliquot during collection
 - Collect fraction 2 into an extender
- Uro-genital Ultrasound
 - BPH and Prostatitis are a major cause of male infertility or reduced fertility!
 - ▶ Even as young as 2 to 3 yo in kennels!


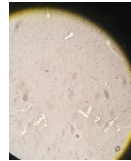


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(OLIGO-ASTHENO-)TERATOZOOSPERMIA SUSPECT

- Orchitis
 - Auto-immune lymphoplasmatic ++
 - Infectious
 - Genetic inheritability
- Nutritional imbalance
 - Selenium, Vit E, Zn
- Endocrine imbalance
 - tumour, hypoandrogenism, hypertestosteronemia, ...

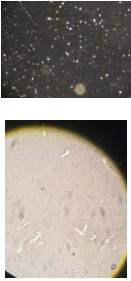



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(OLIGO-ASTHENO-)TERATOZOOSPERMIA WHAT TO DO?

- Perform a second collection 3 months apart?
 - no difference (England 1999)?
 - asthenozoospermia or teratozoospermia can be improved by repeated collections (Kawakami et al. 1997)
- Ask the owner to investigate the lineage
- Ultrasound
- Testis FNA
 - Look for lymphocytosis and macrophage
 - Bacteria?



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(OLIGO-ASTHENO-)TERATOZOOSPERMIA WHAT ELSE TO DO?


- Testis FNA?
 - Look for lymphocytosis and macrophage
 - Bacteria?
- NO, CHECK HORMONES FIRST
 - Testosterone
 - Oestradiol
 - FSH would be great but not possible in practice

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Tyson, Setter gordon, 9 yo

- Testis
 - Normal sizes
 - Symmetrical, mobile, homogeneous in texture
 - Slightly soft
- Spermogram: poor quality
 - Primary abnormalities > 40%.
 - Progressive motility 60%.
 - Total spz= 290 million < normal range
- CPSE = 190 ng/ml
- US: Moderate BPH, Slightly hypoechogenic testis



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What do you do?

Ypozane® ? Tardak® ? Nothing?

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ONE MONTH LATER YPOZANE®

- No improvement

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HORMONAL SOUNDNESS

- Oestradiol 17b = 156 pmol/L (< 40 pmol/L)
- Testosterone = 13,9 nmol/l
(5 - 15 nmol/L = 1,4 - 4,3 ng/ml)
- 16 weeks treatment:
 - ANATRAZOLE 1 MG: 1 mg/20 Kg/d)
- Very good improvement of semen quality

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TESTOSTERONE SOUNDNESS IN DOG

- Testicular concentration > 50-100 X plasma concentration
- Normogonadism
 - Fertile dogs: [T] >> 0.4 ng/ml or 1.4 nmol/l
 - After hCG stimulation [T] > 30 nmol / l (9 ng/ml)
- Suspicion of hypogonadism
 - [T] < 0.4 ng/ml or 1.4 nmol/L
 - After hCG stimulation: [T] < 20 nmol / l (5.71 ng/ml): confirmation of hypogonadism

hCG stimulation in practice :

- 30-50 IU/kg IM [T] 24 hours
- 30-50 IU/kg IV [T] 1h30

GnRH can also be used: 0.1-1 g/kg IV [T] 1-2h

Feldman EC, Nelson RW (2004) Canine and Feline Endocrinology and reproduction. Third ed. WB Saunders ed Philadelphia, 1089



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Thank you for your attention

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