CRYPTORCHIDISM IN EQUINES: CURRENT DIAGNOSIS TECHNIQUES
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OBJECTIVES
1) Bibliographic review and synthesis of the main aspects related to cryptorchidism in horses.
2) Summary of the main diagnostic techniques and analysis of new techniques based on the activity of the anti-Müllerian hormone as a biomarker for the diagnosis of cryptorchidism in equines.
3) Comparison based on concrete studies among the main diagnostic techniques.

INTRODUCTION
Types of retention
- Inginal: permanent or incomplete
- Abdominal
- Unilateral/Bilateral

Incidence
- Prevalence in foals 2-8%
- Unilateral cryptorchid > bilateral cryptorchid

Causes and genetics
Multifactorial
- Failure in testicular descent
- Regulated by different genes
- Over-representation in some breeds

Consequences
- Ethology: nervousness, aggressiveness, stallion like behaviour
- Reproductive: infertility

DIAGNOSTIC METHODS
HISTORY, PALPATION & ULTRASONOGRAPHY
- Rig (entire male horse with stallion like behavior and no signs of external testicles)
  - False rig (gelding male horse with stallion like behavior and no signs of external testicles)
- At 1 to 2 years of age, a stallion should receive an examination of inguinal and scrotal areas. If the testes are not present, rectal examination should be performed.
- Ultrasonography (transrectal or transcutaneous): cryptorchid testis smaller, higher degree of echogenicity and difficult to see the central vein.

ANTI-MÜLLERIAN HORMONE CONCENTRATIONS
- Functions of AMH: sexual differentiation during foetal live and inhibition of Leydig cells (quiescent state of testis) in foals.
- AMH secreted only by Sertoli cells
  - Specific marker of testicular tissue
- Cryptorchid stallion > intact stallion > gelding

BASAL TESTOSTERONE CONCENTRATIONS
- Sources of variability: season, age and secretion of testosterone by adrenal glands.
- Cox et al. 1986, (n=1720) 14% not clear
  - hCG stimulating test 6.7%
- Intact stallion > cryptorchid stallion > gelding

CONCLUSIONS
- Cryptorchidism is a relatively frequent condition in equines with a multifactorial origin and a genetic basis.
- The diagnosis can be very simple or very complex and may require the combination of diagnostic techniques.
- The use of basal testosterone concentrations for the cryptorchidism diagnosis generates inconclusive results and may require the use of additional techniques.
- The anti-Müllerian hormone is a good biomarker for the presence of testicular tissue and may be useful in the endocrine diagnosis of cryptorchidism in equines.
- In veterinary medicine, more research is needed into the diagnosis of cryptorchidism by the anti-Müllerian hormone.

REFERENCES
Claes A, Ball BA, Corbin CJ, Conley AJ. 2013. Serum anti-Müllerian hormone concentrations in foals (n=15), and geldings (n=15). Raś et al. 2010.