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Canine 78, XY ovotesticular disorder of sexual development - a case report
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A presumably female, 6-months-old Biewer Yorkshire Terrier was referred to our clinic because of ambiguous external genitalia recognized by the local veterinarian. After micturition using the squat posture, the dog licked its genitalia, which resembled a vulva located in the caudal inguinal region. The wide vulvar opening contained a small, firm, penis-like organ, which could be easily exteriorized. The mucosal surface of its cranial portion was smooth, and in the caudal part a crimped thickening resembling a bulbus glandis was present. However the urethral opening was not visible. The gonads were neither found by palpation nor by abdominal ultrasonography, but a normal corpus uteri with bifurcation was seen. The penis-like organ was built of a bone with surrounding soft tissue. At the age of 13 months, computed tomography was performed to plan gonadohysterectomy (GHE) and to locate the urethral opening. Short uterine horns with soft-tissue dense roundish nods at their cranial endings were depicted. Excretory urography showed normal ureteral openings into the urinary bladder and a normal pelvic urethra; however the extrapelvic urethra could not be followed and the location of the urethral orifice remained unclear. At 15 months of age, prior to GHE, when the dog still did not show any signs of heat, a GnRH challenge test was performed. Serum testosterone concentration increased from 1.7ng/ml to 3.1ng/ml 60 min after Fertagyl\textsuperscript{®} (10µg/kg IM) injection. Intraoperatively, a bicornuate uterus with an apparently shorter left and a normal sized right horn as well as a cervix were identified. Adhering laterally to both uterine horns, thin cord-like structures were running from the cranial pole of each gonad and passing the cervix further caudally. Prostatic tissue could not be identified by palpation. The left gonad, which had the appearance of a testis with adjacent epididymis and was located far caudal from the ipsilateral kidney, was identified histologically as an atrophied testis with Leydig cells and seminiferous tubules containing only Sertoli cells but lacking germ cells. The right gonad, macroscopically resembling an ovary, consisted of ovarian tissue with lutein and granulosa cells surrounding testicular tubular elements on histology. The bilateral cord-like structures accompanying the histologically unremarkable uterus and cervix were ductuli deferentes. Peripheral blood lymphocytes as well as gonadal and uterine tissue had 78,XY karyotype and were positive for the SRY gene. Up to now, only two similar cases were described in dogs as 78,XY sex reversal (2,3), however the present case is the first canine 78,XY ovotesticular disorder of sexual development confirmed both by cytogenetic analysis as well as by histology. Despite the presence of functional testosterone-producing gonadal tissue (1) at the age of 15 months in this dog, the missing effects of testicular hormones e.g. testosterone and AMH during the critical time window of embryonic development may explain the ambiguous external genitalia and bicornuate uterus. GHE is indicated to prevent diseases associated with abdominal male gonads e.g. testicular tumors or inflammatory conditions of the uterus masculinus.