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THE BEAGLE AS A URODYNAMIC MODEL OF BENIGN PROSTATIC HYPERPLASIA

AIMS OF STUDY

Benign prostatic hyperplasia (BPH) is the non-malignant enlargement of the prostatic in elderly men Since the etiology of BPH remains ambiguous, animal BPH models have been proposed to study the pathogenesis of prostatic enlargement However, the urodynamic aspects of these models have not been adequately evaluated From a clinical point of view, the animal BPH model needs to have bladder outlet obstruction (BOO) because two third of patients with BPH or more are urodynamically obstructed

In several animals used for the BPH model the dog is known to develop the spontaneous enlargement of the prostate Thus, the present study was undertaken to determine whether the beagle is a urodynamic model of human ostructive BPH We evaluated the urodynamic aspects of the beagles with prostatic enlargement by using pressure / flow studies

METHODS

12 male beagles (mean age 5 7 years range 3 5 to 8 7) were used to study spontaneous BPH The prostatic volume was measured by transrectal ultrasound under ketamine anesthesia (7mg/kg i m) Since our preliminary study showed that the prostatic volume of the young-adult beagles varied from 7 0 to 14 5cm the volume of 15cm^3 was used as a boundary between BPH and nonBPH These 12 beagles were divided into the two groups spontaneous BPH (prostatic volume$\geqq$15cm^3) and nonBPH (prostatic volume$<$15cm^3)

Seven days before pressure / flow studies, the beagles were anesthetized as decribed above two 5Fr polyethylene catheters were placed in the bladder (one for measurement of bladder pressure and the other for infustion of saline) These catheters were tanneled subcutaneously and secured with a silk suture on the back of the animal On the day of pressure / flow studies, the conscious dog was placed a four-footed standing position in a trough without any restraint Uroflowmeter was set up just under penis of the dog Rectal pressure was also measured by using 7Fr balloon catheter Thus without anesthesia, pressure / flow studies were performed in the spontaneous BPH group and the nonBPH group

In addition we also evaluated the urodynamic aspects of the beagles with hormone-induced prostatic enlargement 7 male beagles (mean age 3 6 years, range 2 4 to 4 5) were used for this study The animals received androstandiol (75mg/day) and estradiol (0 75mg/day) for 28 consecutive days The prostate volume and urodynamic parameters were measured in the same way before and after the hormone administration

RESULTS

The prostatic volume and dog's age in the spontaneous BPH group as well as in the nonBPH group are shown in Table I In all conscious beagles, bladder pressure rectal pressure detrusor pressure and flow rate were satisfactorily recorded during micturition (Fig 1) Maximum flow rate (Qmax) and detrusor pressure at Qmax (PdetQmax) were obtained

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