



International Conference on Animal & Dairy Sciences

July 23-24, 2013 Embassy Suites Las Vegas, NV, USA

Calipers and ultrasonography for measurement of the volume and mass of testes in dogs

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The present study aims to compare the accuracy with which calipers and ultrasonography estimate testicular volume and mass in dogs. The length (L), width (W) and height (H) of both testes from 10 dogs were estimated using calipers and ultrasound and the testicular volumes (V) were calculated using two formulae: $V=L \times W \times H \times 0.52$ (F1); and $V=L \times W \times 0.52$ (F2). The estimates of testicular volumes were then used to predict testicular mass (M), again using two formulae: $M=L \times W \times 0.5533$ (F3); and $M=L \times W \times H \times 0.5533$ (F4). The organs were then collected after postmortem and true testicular volumes and masses were determined by water displacement and an electronic balance. The true testicular volumes ranged from 7.8 to 11 mL (mean 9.3 mL; n=20) and there were strong correlations ($P<0.0001$) with the estimates derived from ultrasound measurements with both F1 ($r^2=0.936$) and F2 ($r^2=0.895$). The correlations were also strong ($P<0.0001$) with the data derived from caliper measurements ($r^2=0.889$ for F1 and $r^2=0.860$ for F2). The true testicular mass ranged 8.2 to 11.2 g (mean 9.8 g; n=20 testes). The correlation coefficients were $r^2=0.773$ (F3) and $r^2=0.763$ (F4) with estimates based on ultrasonography ($P<0.0001$), and $r^2=0.751$ (F3) and $r^2=0.755$ (F4) with estimates based on calipers ($P<0.0001$). We conclude that ultrasonography might provide slightly more accurate estimates when combined with the formula $L \times W \times H \times 0.52$ for testicular volume and the formula $L \times W \times H \times 0.5533$ for testicular mass. On the other hand, caliper measurements are reliable, inexpensive and easy to obtain, and would be equally as valid and useful in clinical practice.

Biography

A. Junaidi gained his doctorate (Ph.D.) in Reproductive Endocrinology in 1999 from Murdoch University, Western Australia. In 2003, he took up a joint position as a Research Scientist in The School of Veterinary Science, at the University of Queensland, Brisbane, Australia and again in 2003-2004, he took his postdoctoral fellowship in the Institute of Reproductive Medicine, Muenster University, Germany. In 2007, he was awarded by Endeavour Postdoctoral Fellowship to do a research project in the Animal Biology, The University of Western Australia. Again in 2008, A. Junaidi was awarded the Endeavour Executive Award to learn Management Training in the world class university, The University of Western Australia. He worked as a Professor in Reproduction in 2009 at Gadjah Mada University. In 1993-2008, he worked as a Lecturer at the Faculty of Veterinary Medicine, Gadjah Mada University. During 2006-2007, he served as the Head of the postgraduate students (master and doctoral Students) at Study Programme of Veterinary Science, Faculty of Veterinary Medicine, Gadjah Mada University. Just in a short period of the beginning of 2008, he served as The Head of Improving Quality Management System at Gadjah Mada University. Since 2009, he took up position as an Education Attache in The Indonesian Embassy in Canberra, Australia. He has published more than 25 papers in reputed journals and is the author of two textbooks.

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