Developing a Searchable Website for Oncology Clinical Trials in Companion Animals

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Introduction

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Acknowledgements
Radiographic Measurement of the Tibial Plateau Angle in the Ovine Knee

Introduction: Comparative animal models are needed for the development of orthopedic treatments in the human knee. Most animal models approximate human body weight, joint size, and biomechanics. The posterior-distal slope of the tibial plateau, measured as the tibial plateau angle (TPA), influences knee biomechanics and alters the implantation of knee replacement components. The dog, when compared to the human, is much smaller and has a steeper TPA, making it a less than ideal model for human orthopedic research. The ovine more closely approximates the bone joint size and body weight of the human, however the TPA has not been extensively studied.

Materials and Methods:
- 98 = 72 pelvic limbs (36 ovine)
- Musculoskeletal
- Columbia Radiological cross
- Tissues harvested in accordance with IACUC policy
- Digital radiographs (bone and tissue flexed – 90°)

Tibial Plateau Angle (TPA) Measurement (Figure 1):
- Tibial mechanical long axis = line drawn from rotational center of proximal tibial surface through center of the distal tibial plateau
- Tibial plateau = line drawn between the anterior and posterior articular margins of the medial tibial plateau
- TPA = angle formed between a line perpendicular to tibial mechanical long axis and the line of the medial tibial plateau edge

Results: The TPA of the ovine knees is summarized in the table below:

<table>
<thead>
<tr>
<th></th>
<th>Left Knee</th>
<th>Right Knee</th>
<th>Left and Right Knees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>12.8°</td>
<td>12.5°</td>
<td>12.6°</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>2.6</td>
<td>3.5</td>
<td>2.8</td>
</tr>
<tr>
<td>Median</td>
<td>12.5</td>
<td>12.5</td>
<td>12</td>
</tr>
<tr>
<td>Range</td>
<td>8.5 - 20</td>
<td>8 - 21</td>
<td>8 - 22</td>
</tr>
</tbody>
</table>

Discussion and Conclusion: The posterior slope of the tibial plateau plays an important role in the biomechanics of the human knee. The TPA in the human knee has been reported as 15° by Jung et al. The dog, in contrast, has a relatively steep tibial plateau slope (TPA 23.5°-28.3°). The ovine, with body weight and joint size similar to the human, TPA that approximates that of the human. It appears to be an outstanding comparative animal model for research in human knee including interior cruciate ligament (ACL) reconstruction, total knee replacement, kien-arthropathy, and meniscal repair.

Acknowledgements: The authors sincerely thank the Mental Veterinary Scholars Program for their generous salary support, SwedishLabs for providing Orthopet® software, and the CSU Small Animal Comparative Orthopedic Laboratory team for their assistance and support.

15th Annual Mentis-NIMH National Veterinary Scholars Symposium, August 5-6, 2016 – Athens, Georgia. Sponsored by.
A commercially available sidophore-receptor and porin-based vaccine reduced the prevalence of E. coli O157:H7 in the feces of beef cattle under field conditions in 10 commercial feedlots. B. A. Butler, D. U. Thronson, B. Witterman.