Collaboration in Evaluation and Management of Primates

Bruce Rothschild*
University of Kansas, USA

Collaborations are typically initiated when one of the parties recognizes that they either lack the skills or the experience to address a challenge in explaining and managing an aspect of primate behavior or health. It also requires identification of the appropriate partner who is knowledgeable and experienced in a field at least tangential to the problem. Tangential infers that the partner has experience/knowledge with and of the behavior/health issue, but not necessarily in the same species or that they have problem solving skills, documented across phylogenetic lines. This is not to say that such experience/education cannot be pursued in isolation without collaboration, but that approach is very time expensive, no longer even required for those in pursuit of advanced academic degrees and subject to semantic limitations [1]. Human and veterinary medicine have a shared vocabulary, often quite disparate in meaning, and this statement is no less true across other fields of endeavor.

Collaboration can take the form of the partner simply recognizing the nature of the behavior/health interest, with subsequent brainstorming to identify a course of intervention that is appropriate, non-disruptive and safe for a specific primate species. The prime example of this form of collaboration is the arthritis that affects 20% of gorillas and which is responsible for behavioral changes, retardation of growth development and ambulation and significant discomfort/pain [2,3]. The arthritis is similar to a disease in humans [4] and was once called by the name rheumatoid arthritis [5]. Anatomical studies revealed that it was not rheumatoid arthritis [4]. The character of joint disease, its skeletal distribution and spectrum (epidemiology) in the gorilla population describe a different form of arthritis, but one actually common in humans [4]. The manifestations and epidemiology are identical to that of human spondyloarthropathy [4].

That was the first step: Identifying the problem. The next and most important step was to develop a course of treatment. Treatment approaches for the human disease were reviewed and assessed as to which might be safe and feasible to use in the gorilla. Most of the human treatments for this disease require close (e.g. monthly) blood and urine testing to reduce potential toxicity [6]. Medications such as methotrexate (an anti-cancer medication at high doses), injectable gold salts and hydroxychloroquine (an antimarial medication) were rejected as not feasible in a species that often interprets even a glance as a threat gesture. The remaining medication, sulfasalazine, is administered orally, doses can be “hidden” in a banana and less frequent blood and urine testing is acceptable (although not desirable in humans). The collaboration produced an approach [7] that subsequently became the standard for treatment of gorillas with this inflammatory arthritis and its use has since been extrapolated to other species.

The other form of collaboration is that of full communication. An inadvertently overheard comment led to a diagnosis, early recognition of which could have avoided a significant delay in therapeutic intervention, saved a great deal of veterinarian time and vacated the need for extensive, expensive testing. A red ruffed lemur Varecia varecia became lethargic and appeared to be in pain. Radiologic examination revealed periostal reaction, diffuse in both its skeletal distribution and its alterations of individual bones. The character and pattern of skeletal involvement was characteristic of hypertrophic osteoarthropathy [8], a known disorder in humans, as well as in other mammals [4]. Hypertrophic osteoarthropathy is generally perceived as a complication of intrathoracic pathology (e.g., tuberculosis, cancer, parasitic lung infection, heart infection), but may also complicate disease of the nasal passages and sinuses (e.g., cancer), gastrointestinal/esophageal, cardiac, or hepatic disease (usually abdominal masses or lesions) [4,8].

Extensive workup for these causes of what is referred to as secondary hypertrophic osteoarthropathy proved negative [9]. Other causes of generalized periosteal reaction were then assessed. Neither there was no laboratory evidence for yaws [10] reported in gorillas [11] nor was there evidence for kidney disease [12], previously reported in black and white ruffed lemurs [13]. We were stymied. The lemur’s daughters subsequently exhibited similar behavior as noted in their dam and x-rays revealed the same process. The veterinarian then made the critical, but off-hand comment that the daughters had the same facial coarsening that he had observed in their dam. That shared observation directed the diagnosis.

There is a form of hypertrophic osteoarthropathy, referred to as primary hypertrophic osteoarthropathy or as pachydermoperiostitis, recognized because of that additional characteristic, coarsening of facial features [14]. Thus, the first non-human occurrence of this phenomenon was recognized [9].

Collaboration requires identification of specific questions, brainstorming as to approaches and sharing of thoughts, no matter how fleeting. The fallacy of perspectives becomes clearer across disciplines, when there is the requirement to educate/convince their collaborator. Free exchange of perspectives, obviating hierarchy and professional level or office (e.g., professor, dean, provost, director) is quite rewarding. Ideas pass multilaterally with benefit to all participants.

References

*Corresponding author: Bruce Rothschild, University of Kansas, USA, E-mail: bmr@ku.edu

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