

# A Review of Chiropractic Veterinary Science: An Emerging Profession With Somatic and Somatovisceral Anecdotal Histories

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**ABSTRACT:** This presentation discusses the state of animal chiropractic care. It is also designed to illustrate the variety of disorders and the response of quadrupeds to chiropractic spinal adjustments and management. Further, it serves to portray the range of animals that have been served by chiropractic spinal care. The diversity of conditions and their neurological implications provides some insight into the current models of the vertebral subluxation complex. *Method:* A call for cases was made through an informal electronic newsletter. This proved to be most successful. In addition, the authors' own experiences also brought examples of animal patients. Finally, an internet search of The Index to Chiropractic Literature, PubMed and Google, revealed informative detail on the emerging profession of veterinary chiropractic. *Review:* There is remarkably little in the way of high-level research on spinal adjustments of animals as the patients. There are however, extensive papers on animals as research subjects on this topic. It became apparent that pet owners' demands have driven the advancement of this relatively new profession. *Discussion:* A general discussion on the emergence and background of veterinary chiropractic is presented. The cases cited are not intended to be in classic case history format. The manner in which patients bring pets to chiropractors can often be casual and even impromptu. However, with some practitioners specialising their practice in animals, a greater volume of formal evidence is bound to emerge. Indeed it is surprising that the profession has been accepted and evolved thus far in the absence of greater research. *Conclusion:* Examples of somatic and somatovisceral neurovertebral disorders afflicting vertebrates are presented. However, these anecdotal histories are not at a level approaching formal research. They are examples of the types of cases seen regularly and noted at this stage in the development of the veterinarian chiropractic profession. The terminology ('chiropractic' and 'subluxation'), and concepts appear to have been embraced by veterinarian chiropractors, associations and practitioners. Further, chiropractic techniques seem also to have been adopted. Despite the dearth of research, veterinary science appears to have implemented and merged with a chiropractic model of health care - seemingly more readily than medicine.

INDEX TERMS: (MeSH):ANIMALS; VETERINARY MEDICINE; VERTEBRATES. (Other): QUADRUPEDS; SUBLUXATION; SOMATOVISCERAL.

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## INTRODUCTION

Chiropractors have been adjusting the spine of animals and birds "almost from its inception" some 115 years ago.<sup>1</sup> Ramey cites Gibbons and Godzway as recording chiropractic care of animals from early last century.<sup>2,3</sup>

We record birds, reptiles, a shark and kangaroos that have been reported as being adjusted with positive response. Now however, veterinarians are collaborating with chiropractors and developing the chiropractic model in a growing amalgamated profession, with "several hundred members worldwide."<sup>4</sup>

At times, there has been some scepticism as to whether manipulation of spines is efficacious, and that any perceived results could be due to a placebo effect.<sup>5</sup> However, with the dramatic results observed in chiropractic care of infants and animals, the argument in support of the placebo effect or psychosomatic factors, must be questioned - if not defused altogether.

In 2008, Ramey stated that "there's no evidence whatsoever that animals can benefit from, or even experience, placebo effects. Indeed when doctors claim effectiveness for a treatment beyond the evidence in the belief that they are doing the patient a favour by inducing a 'placebo effect' to the animal's supposed benefit, they are abusing three trusted roles: expert, authority figure, and comforter. Animals deserve better."<sup>5</sup>

It seems unexpected that spinal manipulation of animals has been adopted and accepted so widely in veterinarian circles with relatively little research.<sup>1</sup> One could compare this to relatively extensive research conducted by the manipulative professions over many decades, yet some appear to dismiss or ignore such studies without research evidence to the contrary,

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and still express reservations as to its efficacy. One assumes that as it once was with 'human' chiropractic, the clinical results with animals are sufficient to elicit patient health, comfort, and owner satisfaction.

## METHOD

This paper originated as a result of requests from patients asking doctors of chiropractic to check the spines of pets as a result of aberrant behaviour, visceral symptoms, or physical difficulty suffered by their pet.

A major contribution to this paper's preparation was brought about by the appeal for anecdotal reports concerning animal adjustments through an informal newsletter service. The response was remarkable.

Further material was gleaned from internet searches of The Index to Chiropractic Literature, PubMed and Google, as well as requests to particular chiropractors who were known to be involved with the adjustment of animals.

## REVIEW

In researching this topic however, the earliest association of chiropractic care with animals we located was reported by Palmer in 1899<sup>6</sup> the year following Palmer's foundation of chiropractic.

One section of Beatty's 1939 text deals with "Adjusting Dumb Animals and Fowl." He describes adjusting small animals such as dogs and cats, but also "horses, sheep, cattle and large hogs" He then states that "fowl may be adjusted ..."<sup>7</sup>

Anecdotally, there is a remarkable range of animals that have been reported as undergoing spinal adjustments.<sup>8</sup> Obviously some would need to be adjusted under anaesthetic (MUA). Others were adjusted manually, and others with implements such as a pleximeter, or an impulse instrument such as an Activator.

As well as the usual domestic animals, the variety of vertebrates also includes some of the more exotic species, such as:

- Badger<sup>9</sup>
- Bear – Brown,<sup>9</sup> Grizzly<sup>10,11</sup>
- Birds<sup>9,12</sup> – Budgerigar,<sup>13</sup> Galah,\* Magpie,<sup>14</sup> Parakeet,<sup>9,15,16</sup> Pigeon,\*\* Poultry:<sup>7</sup> Hens,<sup>7</sup> 'Chickens',<sup>17</sup> Rooster<sup>18</sup>
- Bovines – Buffalo,<sup>9</sup> Bull,<sup>19,20</sup> Cattle,<sup>7,12</sup> Cow,<sup>10</sup> calf,<sup>21</sup>.
- Camelids – Alpacas,<sup>#</sup> Camel,<sup>13</sup> Llamas<sup>9,10,21</sup>
- Deer<sup>22</sup>
- Ferret<sup>13,21</sup>
- Goats<sup>12,21,19</sup>
- Great Dane<sup>#</sup>
- Horses<sup>9,10,12,13</sup> – Arabian,<sup>22</sup> Draft,<sup>15</sup> Pacers,<sup>19</sup> Shetland Ponies,<sup>17,22</sup> Trotters,<sup>19</sup> Donkeys,<sup>21</sup> Mules<sup>21</sup>
- Koala<sup>13</sup>
- Kangaroo,<sup>^13,23</sup> Wallabies<sup>13</sup>

- Lion<sup>10,24</sup>
- Mountain Lion<sup>9</sup>
- Pigs/Swine<sup>12,21</sup>
- Primates – Orangutan,<sup>25</sup> Siamang Gibbon<sup>13</sup>
- Rabbits<sup>9,21</sup>
- Reptiles<sup>12</sup> – Lizards,<sup>^^10</sup> Snakes<sup>13,21,26</sup>
- Rodents – Chinchillas,<sup>27</sup> Guinea Pig,<sup>21,28</sup> Rats,<sup><</sup> Squirrel (baby)<sup>22</sup>
- Shark<sup><<</sup>
- Sheep<sup>7,22</sup>

(\*Vagg K. Personal communication. 1<sup>st</sup> July 2011. \*\*Robb P. Personal communication. 21<sup>st</sup> June 2011. #Stephenson R. Personal communication. 21<sup>st</sup> June 2011 ##Pyrah E. Personal communication. 7<sup>th</sup> July 2011 ^O'Dwyer P. Personal communication. June 22<sup>nd</sup> 2011 ^^Condon M. Personal communication. 2011, Aug 8<sup>th</sup>. <Anderson-Peacock L. Personal communication. 24<sup>th</sup> June 2011 <<Vagg K. Personal communication. 1<sup>st</sup> July 2011)

In a remarkable incident, video footage of the birth of an elephant calf at the Elephant Safari Park in Indonesia, showed the full birth of an apparently stillborn female calf. The mother tried to revive the calf first by 'gently' kicking it. The mother followed this instinctively, by grasping the calf's head in her trunk, and deftly delivering what appeared to be a general neck manipulation. The calf immediately began to breathe, then roused itself, and stood. While one cannot say conclusively that the mother 'manipulated' the calf's neck, the footage does seem convincing, especially with its apparent successful revival.<sup>29</sup>

In a further elephant anecdotal report, it has been noted that a Californian chiropractor, Dr Michael Gleason, has not only adjusted the vertebrae of a 58-year-old elephant, but he has also adjusted a Bengal tiger, amongst many other species.<sup>30</sup>

In another non-manipulative incident, at the Melbourne aquarium, a 10-year-old seven-gill shark was successfully treated by needling trigger points in the tight muscles along one side of its spine. It had been rescued and found to swim in tight circles only to the right. It reportedly swam normally following the needling.<sup>31</sup>

## DISCUSSION

### Development of the Veterinary-Chiropractic Profession

A veterinarian who practised animal manipulation for many years was Dr Alex Hauler of Melbourne, Australia. Dr Hauler was driven to help establish the Chiropractic Veterinarian course at RMIT University in 1999. His reputation, particularly in the field of manipulative management of greyhound performance, was rewarded with numerous accolades of appreciation.<sup>32,33</sup> These were notably in the form of photographs of winners on his reception room wall.

While there appears to be a dearth of published research papers on veterinary chiropractic, there have been four masters graduates from the program, and one PhD candidate

in progress as of 2011 at the RMIT University in Melbourne. There appears to be a growing demand for this model of animal health care. Over 150 practitioners graduated from the course in veterinarian chiropractic at RMIT before it discontinued in 2009 after 12 years.<sup>34</sup>

Other courses are held by various professional organisations including the American Veterinary Chiropractic Association (AVCA), the Veterinary Chiropractic Association (IVCA), the International Association of Veterinary Chiropractors (IAVCP) and the American Animal Adjusting Association (AAAA). Courses are conducted in Canada, USA, UK, and continental Europe, with professional associations certifying qualifications.<sup>35,36</sup>

As an indication of the demand for this form of health care, in the USA by 2010 there were reported to be over 3,400 licensed veterinarians and 4,400 licensed chiropractors trained to administer chiropractic spinal adjustments to animals.<sup>35</sup>

The demand for manipulative care for vertebrates was recognised as being initiated by the pet owners. One would presume this is in order to obtain resolution of certain disorders that have not responded previously. In 2002, Boldt stated *"The use of complementary and alternative veterinary medicine continues to grow within the veterinary community. As more clients (sic) seek out complementary and alternative medicine for their own care, they begin to seek out these forms of therapy for their animals."*<sup>37</sup>

As early as 1992 the American Association of Equine Practitioners (AAEP) adopted a guideline concerning chiropractic care of horses. In 1998, the American Veterinary Medical Association (AVMA) then recognised chiropractic as a valid modality of treatment and developed guidelines for the practice of chiropractic in the veterinary field. The AAEP guideline read: *"Veterinary chiropractic should be considered a medical act and should be performed by a licensed veterinarian or a licensed chiropractor..."* It concluded, *"Chiropractic is a valuable treatment for horses, especially as clients (sic) were becoming more demanding of their horses and more aware of subtle lameness problems."* This would suggest recognition of an area where results have not been forthcoming under traditional equine care.<sup>38</sup>

A reflection of the demand for chiropractic services for quadrupeds is demonstrated in the 2000 paper by Schoen. This study surveyed personnel at all 27 veterinary schools in the US. From the 34% of responses, Schoen found that '61% believed that chiropractic should be included' in their curriculum.<sup>39</sup>

Currently in the US, various states are in the process of considering amendments to veterinary and chiropractic acts in order to formalise the legislation of this new profession.<sup>40</sup>

Apart from utilising the term *chiropractic* itself, this latest profession seems to have adopted such chiropractic terms as *adjustment* and *subluxation*. The American Holistic Veterinarian Medical Association also cites chiropractic references and adjusting instruments. Many of the members are veterinarians to start with. Their web site acknowledges the chiropractic contribution to this science.<sup>41</sup>

Contrary to the chiropractic-medical situation in Australia, there appears to be mutual respect and co-operation between

veterinarians and chiropractors. The organisation representing the united profession in Australia, is the Australian Veterinary Chiropractic Association. This effectively merges their political, clinical and scientific elements.

It is interesting to note that the term *veterinarian chiropractic* has been adopted rather than a more neutral *veterinary manipulation*. The positive recognition of the chiropractic concepts and their adoption is significant acknowledgement of the potential contribution that it may make towards animal health interests.

In recent years, texts,<sup>42-44</sup> videos, seminars, and postgraduate and tertiary courses have all become available. (Fig 1) The texts also carry a number of anecdotal reports, as well as historical background on the emergence of this developing profession.

### Limited Research

Scientific publication of research on animal veterinary chiropractic is distinctly limited, even though it was first mentioned in the indexed literature in 1960.<sup>45</sup> However, several quality programs are now available to educate chiropractic and veterinary professionals together and it is expected that continued collaboration will lead to a greater volume of research being conducted and published.

Much of the published material to date that appears on veterinarian and chiropractic practitioners' web sites is anecdotal. In addition, *"There have been many favourable articles in the lay literature describing the value of chiropractic care for animals, but scientific publications have been sparse."*<sup>46</sup>

As recently as 2010, Haussler stated that "All forms of manual therapy have variable reported levels of effectiveness for treating musculoskeletal issues in humans, but mostly only anecdotal evidence exists in horses." He also confirmed that "Currently, there is limited evidence supporting the effectiveness of spinal mobilisation and manipulation in reducing pain and muscle hypertonicity."<sup>47</sup>

Some 12 years ago, Haussler had stated that in relation to traditional equine knowledge, *"Chiropractic provides additional diagnostic and therapeutic means that may help equine practitioners to identify and treat the primary cause of lameness or poor performance. Specialised training in the evaluation and treatment of vertebral joint dysfunction and neuromusculoskeletal disorders places chiropractic in the forefront of conservative treatment of spinal-related disorders. Nevertheless, limited research is currently available on equine chiropractic and other non-traditional modalities in veterinary medicine."*<sup>48</sup>

The 'limited research' does not appear to have prevented the adoption of chiropractic principles and models by many veterinarians.

Significant studies exist where animals were the subjects in research into the chiropractic model of vertebrogenic disorders.<sup>49-52</sup> It is only in relatively recent decades that the demand for care of spine-related animal disorders seems to have emerged.

As recently as 2008, Gomez Alvarez and colleagues stated that in relation to back pain and spinal mobility in horses

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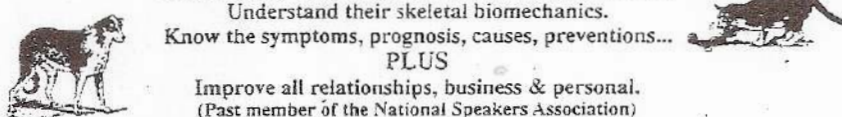
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Figure 1 Advertisements for courses, videos and seminars in animal chiropractic. In the publication 'Dynamic Chiropractic' Circa 1995-1998.

“little scientific work had been reported on the subject.” Their study showed “Chiropractic manipulations elicit slight but significant changes in thoracolumbar and pelvic kinematics.”<sup>53</sup>

Bidstrup explored an interesting concept in a paper discussing a possible link between equine birth trauma, and sensitivity of the ribcage and wither regions. This 2005 paper also queried a possible relationship with one-sidedness in horses. He noted that evidence was present in an affected horse’s gait, posture, and girth sensitivity – particularly on the right upper dorsal spine area. He explained that this was probably a common result from the trauma of birth.<sup>54,55</sup>

In deviating from musculoskeletal conditions, a particularly interesting case report by Lynch was published in 2003. It related the “Successful treatment of lick granuloma with chiropractic therapy.”<sup>56</sup>

In a Letter to the Editor the veterinarian Taylor stated that she was aware of such animal conditions as urinary incontinence, chronic anal gland impaction/irritation, sterile cystitis in cats, and horse and dog lameness, all being successfully resolved following chiropractic spinal adjustments.<sup>57</sup> Alleviation of such visceral dysfunction by adjustment of specific spinal subluxations would tend to support the hypothesis that their correction can address certain affiliated neurological and somatovisceral disorders, not just the more common musculoskeletal conditions.<sup>22,58-60</sup>

The veterinarian Inman states that veterinary chiropractic adjustments can assist such somatovisceral conditions as colic in horses, chronic inflammatory bowel disease in cats, and idiopathic canine epilepsy.<sup>61</sup>

In further recognition of a neurovertebral relationship with epilepsy, the veterinarian Taylor states on her website that “Regular chiropractic adjustments are especially effective in treating cases of epilepsy that follow head injuries or physical trauma, as well as chronic, recurrent ear infections that seem to trigger seizures.”<sup>62</sup>

Internet sites of this emerging profession comprising veterinarians seem to freely accept the chiropractic term ‘subluxation’ to differentiate an involved intervertebral articulation from a normal functioning articulation.<sup>40</sup> The American Holistic Veterinarian Medical Association is another such site. It cites chiropractic references and adjusting instruments and it appears to acknowledge the chiropractic contribution to this science.<sup>41</sup> While a veterinary orthopaedic manipulation site (VOM) lists a range of conditions which are routinely treated.<sup>63</sup>

Due to the often informal approaches and circumstances that seem to accompany requests for pets to be checked and treated, it is unfortunate that details of full case histories have not been published.

However, as some chiropractors and veterinarians do specialise in animal chiropractic, we would call for, and look forward to published papers based on their records.

## Safety

The authors did not locate any documented reports of adverse incidents in their research on this topic which included a wide variety of vertebrates. As with human

care, and through the appropriate post-graduate training, it would be expected that all necessary precautions in selecting appropriate patients by an analysis, examination and recognition of critical signs, would minimise any possibility of complications.

An extensive study recently confirmed that for human patients in regard to appropriately qualified providers, cervical vertebral manipulation is a relatively safe procedure. Cassidy and colleagues analysed 818 stroke patients representing “more than 100 million person-years.” They concluded that patients under chiropractic care were no more at risk of stroke than patients attending medical practitioners.<sup>64</sup>

Indeed, it was noted that as there were a number of delicate spines in ‘patients’ – namely birds which included parakeets,<sup>9,15,16</sup> budgerigars,<sup>13</sup> a galah (Vagg K. Personal communication. 1<sup>st</sup> July 2011), a pigeon (Robb P. Personal communication. 21<sup>st</sup> June 2011), and a magpie,<sup>14</sup> the technique for cervical adjustments of them would seem a fair test of the safety of spinal adjustments.

It was also noted that on occasion, a cauda equina syndrome in canines and other vertebrates<sup>28</sup> resolved particularly well under chiropractic adjustive care, as reflected in some of the cases mentioned here. However in humans, this condition would be regarded as a contraindication to such spinal care procedures.<sup>65</sup>

## Back Pain, Flexibility and Scoliosis Studies

One research project assessed asymptomatic horses. In 2008, Sullivan *et al* compared the nociceptive thresholds ‘in 38 mature horses exhibiting no clinical signs,’ with a control group following spinal manipulation. They concluded that the (instrument assisted) “chiropractic treatment and massage therapy increased spinal mechanical nociceptive thresholds (MNTs) within horses not exhibiting signs of lumbar pain.”<sup>66</sup>

Another study at Cornell University by Haussler *et al* in 2007, found that, in ten healthy horses, “SMT (HVLA) induced a 15% increase in (vertical) displacement and a 20% increase in applied force, compared with control measurements.” They opined that this indicated increased vertebral flexibility.<sup>67</sup>

An investigation of equine kinematics by Faber and colleagues in 2003 concluded that in horses with “back-related locomotion anomalies... manipulation had a measurable (beneficial) influence on the kinematics of the thoracolumbar spine.”<sup>68</sup>

In view of the limited number of veterinary studies, it is noteworthy that there is now widespread adoption of human studies into the topic of animal manipulation with citation of chiropractic papers as references.

## ANECDOTAL CASE OBSERVATIONS

The reports presented here are informal and do not claim to meet the level demanded by formal research. They are presented as subjective accounts which relate to types of vertebral dysfunctions associated with various disorders, especially those reflecting neural function, and the patients’ responses to those spinal adjustments. These are not weighted proof of efficacy, they are however reasonable clinical observations with positive outcomes.

As a noted feature, the cases cited mostly highlight the specificity of their examination, (primarily by palpation), and their subsequent adjustment. There was minimal reference to general manipulation and mobilisation techniques, as opposed to specific adjustments.

While anecdotes are not generally regarded as high level evidence, the American Veterinary Medical Association revised its Guidelines on Alternative and Complementary Therapies in 1996. It stated that “*Sufficient clinical and anecdotal evidence exists to indicate that veterinary chiropractic can be beneficial.*”<sup>64</sup> The manipulative practices appear to have been adopted by a number of veterinary clinics before controlled or blinded studies into the topic - seemingly on the basis of clinical results and patient demand. In essence, this is a different policy to that taken by medicine in its recognition of a chiropractic model.

In a further statement Taylor and Romano “...*suggest that those highly sceptical or critical of veterinary chiropractic, while awaiting more research, explore the daily clinical aspect of chiropractic in animals. Anecdote can be useful and powerful. We simply invite you to see the clinical results for yourselves.*”<sup>69</sup>

Early anecdotes with positive outcomes appeared in the Journal of the American Medical Association in 1921. They related the report of the successful sacral manipulation of a mule “*that is down in the back and can't get up...*”, an apparent paresis of a Scotch Collie, and the adjustment of T6 and T8 on a cow with possible bovine bloating.<sup>70</sup>

While some may question the validity and value of anecdotes, this form of evidence has to be regarded as a starting point. Such reservations were refuted by Enkin and Jadad, they note that anecdotal evidence does have a contribution to make. They state that, “*Anecdotes are powerful tools that humans use to make decisions. Despite their power and influence, they are sometimes misused, and sometimes undervalued. Ignoring or under-estimating the role of anecdotal information in health care decisions is likely to hinder communication among decision makers, and to retard their uptake of research evidence. Anecdotal evidence should not be considered a replacement for, but as a complement to formal research evidence. If evidenced-based health care is to meet its potential, the important role of anecdotes must be acknowledged, studied and utilized.*”<sup>71</sup>

Indeed, Stuebe opined that medically, the experience gained from Level IV evidence in the form of *adverse anecdotes* (i.e. adverse events), strengthened clinical judgement by experience and contributing towards subsequent patient care in a positive way. We would submit that positive anecdotal evidence does likewise, at least as an initial step in compilation of an evidence base.<sup>72</sup>

The following cases were drafted from reports submitted by various chiropractors.

### **Case 1. Alsatian - Dysplasia**

Anecdotally, we are aware of a particularly intriguing case concerning an 8 year-old male Alsatian dog. This canine was losing the use of its hind legs – a partial paralysis (paresis). The owner was not keen on the previously recommended surgery, and brought the dog to her chiropractor. After

adjusting the dog's sacroiliac joints, the dog suddenly took off and ran a lap of the car park – where it had been adjusted outside the clinic. The dog raced one lap, returned to the chiropractor, and jumped its front paws up onto his shoulders, licked the practitioners face (in what appeared to be a display of appreciation), Then took off for another lap. (McKibbin MR. Personal communication, 9 Nov 2009.)

### **Case 2. Collie Cross - Low Back Dysfunction**

A six-year-old collie exhibited signs of being ill-at-ease, and was generally stiff in its normal movements - like an old dog. Initially, by ‘chatting’ to it, then with gentle patting, it allowed the chiropractor to conduct a spinal examination by palpation.. The owner had indicated that she thought the dog “had a crook back.”

After explaining the dog's apparent vertebral problems to the owner, and with their permission, the indicated areas were adjusted. Immediately, the dog was friendlier, less reactive to previously tender areas along its spine, moved with far greater freedom, and began wagging its tail. (McKibbin MR. Personal communication, 17 June 2011.)

### **Case 3. German Shepherd - Dysplasia**

At about 4-months-of age, ‘Gee’ climbed out of the family car and just sat - suddenly unable to move.

Subsequently, a veterinarian performed an x-ray examination and concluded that Gee had severe hip dysplasia, and should be ‘put to sleep’.

A second opinion confirmed the vet's diagnosis and recommendation.

The owner then took Gee to the beach for swimming and carried out daily leg massages.

As Gee was still struggling, she then took him to a chiropractor. The chiropractor carried out a spinal examination and a series of spinal adjustments, together with advice on exercises in the ocean and walking.

Today, Gee is now 4-years-old, has fortnightly chiropractic care and apart from the very occasional relapse (especially when cold), has resumed a ‘dog's life’ with normal running and playing. (McKibbin MR. Personal communication, 24 June 2011)

### **Case 4. Dog - Cross-Breed - Incontinence, Skittish, Falls**

Jess was a cross-breed about 8 years old. She had been abused by previous owners, and was quite skittish, even at just the sound of an Activator which was not in contact with her. She suffered dyspnea, bowel and bladder incontinence, would not wag her tail, and would sometimes fall over in trying to stand. All symptoms diminished considerably following just two spinal adjustments. (McKibbin MR. Personal communication. Letter and DVD, 10 June 2011.)

### **Case 5. Labrador –“Archie” Lethargy, Tail Droop**

This 4.5 year-old Labrador was particularly lethargic, would not play, and just lay around all day. In addition, his tail was constantly down. It seemed he could not lift it. Following vertebral adjustments with an Activator, “Archie”

appeared happier, would wag his tail, wanted to play, and was generally much more active. (McKibbin MR. Personal communication. Letter and DVD, 10 June 2011.)

#### **Case 6. Cat – Poor Demeanour**

A cat of unspecified breed and age had been a placid one. Of a morning, it would climb in a bedroom window and sit on its owner's bed. Inexplicably, it stopped its morning climb, it became intolerant to patting, and had become markedly apathetic.

Following a single spinal adjustment, all its symptoms diminished and its activities returned to normal.<sup>73</sup>

#### **Case 7. Galah - Vertigo**

The owner of a Pink and Grey galah – a species of cockatoo, was lying in his backyard getting some sun, whilst his galah was happily walking around near him. He turned over to lie prone, and in the process rolled on the galah, momentarily squashing him. From then onwards, the galah lost its balance. In trying to walk, it would stagger to one side, and then fall over. It would get up and repeat the process. It could not sit on its perch without falling off. A chiropractor examined the bird and it seemed as if its entire head had slipped laterally - i.e. an occipital slippage. The chiropractor held the bird by the shoulders in one hand, and with the other grasped its head and applied an adjustment. He then placed the bird on the ground. It squawked, shook itself, and walked away normally. The problem never returned. (Vagg K. Personal communication, 1 July 2011)

#### **Case 8. Cat with Leukopenia**

A patient brought her cat to her chiropractor. She had spent in excess of \$3500 on veterinary bills in an effort to save the cat. The diagnosis was one of leukopenia resulting in severe reduction of immune system function. The cat was dying, and apparently nothing could be done to save it. The vets had told the patient that the cat would be dead within the week. On examination a severe atlas subluxation was identified. The cat's atlas was adjusted, and two days later the vets gave it a clean bill of health. The cat lived to a ripe old age. (Vagg K. Personal communication, 1 July 2011)

#### **Case 9. Grey Nurse Shark – Scoliosis**

A chiropractor was asked to look at a three-metre Grey Nurse shark at the then Underwater World in Perth. The shark exhibited a C curve scoliosis. Apparently this is a common problem in juvenile grey nurse sharks in captivity. No one knows the cause. The shark was brought into a holding pool about three metres square and 3/4 of a metre deep. Once in the holding area, it was anaesthetised. The marine biologist held its head whilst the chiropractor held it by the tail with one hand, and applied an adjustive thrust to the apex of the scoliosis with the other hand. After the anaesthetic had worn off, the shark was released back into the main aquarium. This process was repeated about six times. There was a noticeable improvement in the scoliosis after every adjustment. After the sixth adjustment the scoliosis had disappeared. The marine biologist had been gathering data pre and post adjustment, associated with the shark's eating and behavioural habits. Pre adjustment, the shark had gone off its food, ate sporadically, and exhibited antisocial behaviour toward other marine life.

Post adjustment, the shark's eating habits had returned to normal and it was exhibiting normal behaviour. A month later the shark was put in a boat, taken out to sea and released overboard. At that time the scoliosis had not returned. (Vagg K. Personal communication, 1 July 2011)

#### **Case 10. Pigeon - "Wing Dysfunction"**

A chiropractor was asked if he would look at "Pidge". "Pidge" could not fly after injuring itself by flying into a window. When Pidge was brought into the clinic, the only test that seemed applicable was the "...can you fly test." In this, Pidge was thrown gently into the air only to have him/her flutter to the ground in a spiral dive. A diagnosis of brachial nerve dysfunction due to lower cervical subluxation was made. It was firmly believed that this injury to the bird was due to the striking angle of impact when it crashed into the window.

The diagnosis of a lower cervical subluxation was made using a Toftness detector. While the patient held Pidge, it was adjusted employing a Toftness style technique with very mild finger pressure. In rechecking, it was found that the subluxation had "cleared", and no other subluxations were present.

It was time to reapply the fly test. Pidge flew straight and level. This outcome would tend to confirm an absence of any placebo effect! (Robb P. Personal communication, 21 June 2011)

#### **Case 11. Saint Bernard - Asthma**

Muffin was a Saint Bernard of unknown age. It attended a chiropractor because her owner noted that Muffin's asthma was relieved following its spinal adjustments under chiropractic care. (McKibbin MR. Personal communication, 12 June 2011.)

#### **Case 12. Miniature Fox Terrier Post-surgical Moodiness, Lower Back, S/I Dysfunction**

'Hollie' was a 11-year-old miniature fox terrier. She ruptured her cruciate ligament, and following surgery, had become unusually quiet. She had uncharacteristically developed a 'moodiness', and also became aggressive towards the owner's other dogs. She was also lame after the surgery because she would not put weight down on her affected hind leg. Prior to a scheduled follow-up to the veterinary surgeon, her lower back and pelvis were adjusted by a chiropractor. Immediately following this procedure, Hollie began behaving like a little puppy again, full of life and enjoyment. In addition, before her adjustment she had trouble hopping into the car, but after the procedure she would spring into the car first, waiting for the family to follow. Hollie continues with symptom-based maintenance care, indicated by an occasional recurrence of nocturnal enuresis. This is readily controlled by these maintenance adjustments. (McKibbin MR. Personal communication, 5 June 2011.)

#### **Case 13. Cat**

A patient observed that her seven-year-old son was not 'his usual self', and was 'out of sorts'. It was also revealed that their once affectionate 1-year-old cat "Shiraz," had become aggressive and unsociable. The chiropractor wondered if the cat's conduct had influenced her son's behaviour.

Following examination and appropriate spinal adjustments, the demeanour of both the cat, and subsequently also the lad's, rapidly returned to their normal contented selves. (McKibbin MR. Personal communication, 2 July 2011.) The possibility of a form of symbiosis existed here due to a close relationship of the cat to the seven-year-old.

**Case 14. Pomeranian Cross - Post-Surgical Paresis, Cauda Equina, Incontinence, Sacroiliac.**

'Basil' is a six year-old Pomeranian Cross. Some four years earlier he had undergone an emergency right-sided hemilaminectomy and discectomy at T12/13. He was left with a great degree of bilateral paresis in the hind quarters, had little to no bladder and bowel control, plus signs of a cauda equina syndrome.<sup>4</sup> It took four years of regular chiropractic adjustments, with his main problem being the left sacroiliac joint.

He is now continent<sup>4</sup> in both functions, and has enough muscle control and strength to ascend and descend stairs independently. Basil has had occasional relapses, but responds very quickly following adjustments. (Roppola J. Personal communication, 21 June 21 2011.)

**Case 15. Horses - Performance and Behaviour**

One equestrian veteran of 30 years stated that both she and her horses depend on chiropractic care. She stated that "Chiropractic treatment makes a huge difference to my horses in their performance level, development and in some behavioural issues." (McKibbin MR. Personal communication, 10 June 2011.)

**Case 16. Snake - Apparent Lassitude**

A zoo owner in Victoria, Australia, thought that his python seemed to be "unwell". He suspected a 'problem' with one of the snake's 421 vertebra. The keeper's chiropractor was consulted, and after a 'lengthy' examination, an activator adjustment was carried out. (at T 276 !) The snake seemed to respond very rapidly, and resumed its normal movement and 'lifestyle.'<sup>26</sup>

**Case 17. Kangaroo - Cervical, Lumbar, Pelvis Dysfunction, Cataracts**

A Wildlife Information Rescue and Education Service (WIRES) volunteer recovered a joey that had been picked up from the road following an accident. It had been in its mother's pouch, the mother having been fatally struck by a vehicle. The volunteer had spent considerable time, money and effort on this orphaned joey.

The vet who had conducted surgery to pin its pelvis and femur that had been broken in the accident, declined to proceed further with the joey, and suggested that a chiropractor might help.

The joey had lost its appetite and was forming scat (pelletised faeces), was becoming blind with cataracts, was lying persistently on its side, its hind legs were stiff and difficult to flex forward.

An examination using surrogate muscle testing revealed subluxations of the pelvis, as well as lumbar and cervical spines. The testing was found to be remarkably definite on all

three regions – especially on a lateral atlas. Adjustments were carried out using an Activator instrument. On rechecking, the findings had cleared.

Over the following days the joey would crawl out of its temporary pouch - a bag, and graze in the backyard. Further adjustments were carried out in an attempt to improve the flexibility of its hind legs. In addition, its sight slowly returned as the cataracts cleared. (O'Dwyer P. Personal communication, 22 June 2011)

**Case 18. Kangaroo - Cervical Subluxation**

A small 1.5metre, 3 year-old (approximate) kangaroo had been tethered to a post by a rope. Following a fright, it struggled and injured its neck as the rope became taut. The animal was presented by a farmer who casually tipped the kangaroo out of a hessian sack. It was too lethargic to hop away. In appearance, its head was floppy, and its ears drooped. It also tended to persistently lick its proximal paws, and the tip of its nose was particularly dry. The owner then held the animal's hind legs with its body resting supine. On palpation, it reacted to pressure over the left lamina of C2. This was quite prominent, with the spinous process distinctly rotated to the right. The posterior cervical musculature was hypertonic. A listing of C2 LI (left lamina posterior-inferior) was adjusted using the Diversified technique. The segment adjusted surprisingly easily.

A check-up was carried out on the penned animal a week later. It's head and ears were upright, its nose was moist and it no longer licked its paws. It was remarkably agile in the pen, and was too lively to catch and physically re-check.<sup>23</sup>

**Case 19. Alpacas – (i) Torticollis, Skin Lesions, (ii) Pelvis**

Utilising an Activator on the cervical and dorsal regions, another chiropractor adjusted a young alpaca (a 'cria') which had a 'wry neck', and skin lesions around the eyes. After a single session, all the clinical signs improved. The chiropractor dodged the protective mother's aggressiveness, and just managed not to get kicked. The mother herself had a 'rotated pelvis' that was also adjusted. Both animals responded well, and the baby alpaca's skin lesions around the eyes also cleared after only a few days following the adjustment. (Stephenson R. Personal communication. 21 June 2011)

**Case 20. Cat – Personality Disorder**

A chiropractor reports adjusting 'Lucinda', her 8-year-old cat a number of times. The cat fell some 3 metres as a kitten. Her upper dorsal spine was the primary area of fixations, although ilium, sacrum and cervicals were also adjusted at times. The contact to the cat was applied using either finger pressure adjustments, or an Activator. The cat preferred the finger adjustments to the clicking sound of the Activator. Indications for an adjustment were evident when the cat was in a 'foul mood,' and basically being 'a naughty terror.' Following her adjustment, she generally sleeps soundly - and is a 'purrfect' cat. (Stephenson R. Personal communication, 21 June 2011)

**Case 21. Red Kelpie - Maintenance Care**

The chiropractor reported conducting dorsal adjustments and massage on "Bess," a 6-year-old Red Kelpie. She would



just flop down and seemed to enjoy the 'special' treatment. (Stephenson R. Personal communication. 21 June 2011)

**Case 22. Basset Hound - Lumbar Disc Herniation, Paresis**

A distressed lady said her veterinarian had diagnosed a "slipped disc" in her Basset Hound, and it would have to be euthanised.

On appearance, the dog's gait appeared to be 'dragging' as in a partial paresis.

Following a chiropractic examination of the dog's spine, mobilisation of the lumbar spine was carried out. Immediately following this procedure, the dog was able to walk around the room. It had improved markedly following the single procedure. (Jones G. Personal communication, 23 June 23 2011.)

**Case 23. Rat – L6 Subluxation, Bowel Prolapse, Paresis**

The owner presented with "Walter" the rat. They provided x-ray films taken previously by a veterinarian. An apparent subluxation was a posterior L6.

Walter also had a prolapsed rectum, and paresis of hind legs and tail. He had had a nasty fall. The posterior L6 was reduced using an Activator.

Immediately following the procedure, Walter's rectum retracted, his tail swept sideways, and his hind legs (which had previously been trailing with the dorsum of the feet on the floor) pulled into a normal sphinx-like posture underneath his body.

Walter also began to resume normal movements and gait. (Anderson-Peacock L. Personal communication, 24 June 2011)

**Case 24. Australian Cattle Dog - Constipation**

A patient presented with her female canine of some 15 years of age. The dog had been constipated for some time. The chiropractor adjusted C1, and a mid to lower dorsal subluxation. Immediately, the bitch ran out to the yard and could not contain her bowels, dropping some stool on the verandah on the way out to the lawn. (Ierano J. Personal communication, 24 June 2011.)

**Case 25. Dog – Pomeranian - Subluxating Patella, Sacroiliac Dysfunction**

By addressing articular mechanics of the ipsilateral sacroiliac joint and hypertonic musculature, a chiropractor reported successful resolution of a subluxating patella in a Pomeranian. This was compared to the history of the contralateral patella which had previously undergone surgical intervention.<sup>74</sup>

**Case 26. Great Dane – Faecal Incontinence, Loss of Mobility**

Sultan was a 9-year old Great Dane. Two years earlier he started to lose his playfulness, lost pace, and had difficulty lifting his feet clear of the ground. When his bowels became incontinent and he would soil his bed, his owner considered having him 'put to sleep'.

Being reluctant to lose big Sultan, the owner sought chiropractic care for him as she had read that this type of condition sometimes has positive outcomes for animals with similar problems. In just a few weeks Sultan was "reliving his youth" and thought he was a pup again. He was able to stroll gracefully and chase and play with other dogs. Sultan has now exceeded his life expectancy. He does however, still have the occasional minor episode of bowel incontinence. (Pyrah E. Personal communication, 7 July, 2 Sept., 2011)

**Case 27. Three -Year-Old - King Charles Cavalier Spaniel.**

'One day Billy was running around happily and the next minute he was in excruciating pain and would not weight bear at all on his hind legs. He was crying even with the slightest movement. It was so awful to see him like that. I carried him to the vet where he underwent an X-ray. The result was a calcified disc in his neck region. The Vet told us that he could only treat his pain and if he did not improve we would have to go down the path of having surgery. He said there was a chance of the disc 'crumbling', which in turn would crush major nerves that would result in paresis of Billy's hind legs. This kind of surgery would cost thousands of dollars.

Billy was vomiting from the side effects of the medication he was on, and his quality of life at this stage was miserable. He then commenced acupuncture for the pain with good results, however his mobility was minimal. All my family have regular adjustments for spinal health, and I told our chiropractor about Billy, although at that stage I had no idea he also adjusted dogs. I carried Billy into the clinic. After his first adjustment I noticed Billy's mobility had improved greatly. After another 2 adjustments Billy was totally back to normal running everywhere. Billy now joins the family for regular maintenance adjustments which in turn provides him with a good quality of life.' (Cited as received with minor editing.) 'Billy' is now 6½ years-old. (Farmer C. Personal communication, 8 July 2011.)

A common theme with 'Billy,' a number of the anecdotes submitted, and also noted by Kamen,<sup>42-44</sup> was the economic cost saving on pets that had previously been advised to undergo expensive surgery. Yet, those pets reportedly responded rapidly following spinal adjustments. This would be noted in savings of pet discomfort, owner angst, time, and cost.

**Case 28. Bovine - Charolais Cow**

In the early 1960s patients, a young couple from California, asked me to come out to the property they had leased in the district, to look at a pregnant Charolais cow who did not want to get up. I used a tennis ball and a rubber mallet on her lumbo-sacral junction, she bellowed, got up and ran away. The payment was to be the first calf she was going to drop, to stay with the herd and thus become the start of my future herd, to be run by the couple. Unfortunately things did not work out as well. The beef market crashed, they decided to plant a crop of peas, and just as they were ready to be harvested the Murrumbidgee flooded and they lost their crop. They cut their losses short and returned to California where they started working in land development. (Peters R. Personal communication, 28 August 2011.)

**Case 29. Canine - Labrador**

During the 1960s I used to visit Leeton on a fortnightly basis. At one such visit one of my regular patients asked me if I would have a look at his Labrador, who seemed to have problems with his left hindquarter. I palpated the hindquarter, found an “ouch” spot and traced it back to the dog’s lower back. I adjusted with a toggle-recoil adjustment using a one-finger contact. It was in the days well before the Activator. No immediate change was noted. On the follow-up visit two weeks later the Labrador, bright-eyed and wagging his tail, came in to pay his account, dropping the first duck he had retrieved since being adjusted into my hands. This was worth much more to me than any financial reward could ever be because some 50 years later that image is still in my memory. (Peters R. Personal communication, 28 August 2011.)

**Case 30. Canine - Newfoundland**

Kya is a large 4-year-old Newfoundland dog, a breed which can weigh over 90kg. She began limping and often had difficulty weight-bearing on her right hind leg. This became more troublesome in walking long distances. Upon presentation to her owner’s chiropractor, examination revealed right hip pain as well as tender regions along her whole spine.

Following a series of adjustments, she gradually began to walk without limping and eagerly lengthened her morning walks. She currently returns for symptomatic care and is soon off running again.

The owner was convinced that without chiropractic care, Kya would have been “crippled” and *put down*, as her condition was deteriorating. (Scorer F. Personal communication, 16, 24 July 2011.)

**Case 31. Blue Tongue Lizards.**

An animal chiropractor working in a veterinary practice had occasion to adjust a number of Blue Tongue Lizards. It seems that the practice saw a number of these lizards that had been attacked by a particular family dog and been vigorously shaken, leading to spinal injury. Fauna rescuers brought other Blue Tongues in to be cared for. The chiropractor observed that the lizards seemed to do better with chiropractic treatment. (Condon M. Personal communication, 8 August 2011.)

**Case 32. Horse**

A chiropractor was asked to examine a horse which for some time had been “...standing in (its) stall paying no attention to anyone or anything. The animal’s head was hanging at an angle, not straight up and down like the other horses’ heads.” The chiropractor “...stood on the side so that the horse’s nose was pointing away from him and took the animal’s nose and mouth area in that hand. He placed his other hand against what must have been the atlas/axis area and held it firm and pulled the lower part of the head toward him.” He noted that cavitation occurred with the adjustment. “When they came back through the barn an hour or so later, the horse was eating and seemed to be normal and continued to make a complete recovery.”<sup>75</sup>

**Case 33. Miniature Schnauzer – 13-year-old.**

The most complex case of the day was Maggie, a 13-year-old miniature schnauzer with severely trembling hind legs.

The vet has “given her shots and shots and he talked about surgery, but the surgery would be hard on her,” says her owner...a teacher, “I even bought her a little wheelchair.” The chiropractic veterinarian believes the problem lies in brain damage, and ties a handkerchief over the dog’s eyes to see if the lack of vision changes her gait. It doesn’t – and that helps identify the part of the brain involved. After he does an adjustment on her, she perks up, trotting quickly, if unsteadily, along the steps in the classroom. “She bolted off,” said the dog’s owner.<sup>76</sup>

**Case 34. Echidna (Spiny Anteater)**

A patient presented a chiropractor with an injured baby Echidna. It had fallen from a box and had landed on its head. It had torticollis. The tongue deviated to the right and hung from the right side of the mouth. In human diagnosis, a stroke would be suspected.

Following an examination, the monotreme was given an upper cervical adjustment using an Activator. The patient was given three adjustments three days apart. Twelve days after the initial adjustment, the Echidna was asymptomatic. (Irvine J. Personal communication, 26 August 2011.)

**Case 35. Wallaby**

A WIRES volunteer presented with a juvenile wallaby which had difficulty maintaining an upright posture. Its mother had been struck and killed by a car. The juvenile had obviously been injured when the mother was killed. Palpation of the animal’s spine and extremities revealed an upper cervical fixation and tenderness in the lumbar spine.

The animal was treated over a period of two weeks using the Activator technique and manual mobilisation. It regained normal gait and showed no signs of neurological deficit. (Irvine J. Personal communication, 26 August 2011.)

**Case 36. Target - Kelpie**

Target is a kelpie cattle dog cross aged 5 years. Target was shot in the head and left on the roadside to die. He was rescued by a passer by and taken to an animal shelter. He was nursed back to health and adopted by a very caring lady. Target started having seizures and at one time was having up to ten seizures per day. On the recommendation of a local vet, the owner presented seeking chiropractic care for Target.

Target continues to have regular chiropractic care and at the time of writing it is six weeks since he had a seizure. (Irvine J. Personal communication, 26 August 2011.)

**Case 37. Thoroughbred Racehorse (“Fields of Omagh”)**

A chiropractor was asked to check out a top thoroughbred racehorse called Fields of Omagh. He was informed that the horse had injured itself (unspecified) resulting in back and leg soreness. Examination confirmed this as well as sciatic nerve involvement that affected its gait. It was due to race two weeks later. It did run, and won the race. A few weeks after that it won the Group 1 race – the Cox Plate.<sup>77</sup>

The authors are aware that the ‘reconditioning’ of horses is not a unique circumstance with equine chiropractors.<sup>42,78</sup> The report on this case provides a concise but general outline of what could be regarded as typical in this situation.

### Case 38. Canine - Weimaraner

I was treating a young English medical doctor who happened to mention that she would have to have her dog *put down* as it was paralysed in the back legs and could not walk. She asked me if I could help her as she was very attached to the animal which was a 2-year-old Weimaraner.

The dog had been examined by a veterinarian, who also conducted a radiological study. The veterinarian's diagnosis of the dog was that of a ruptured disc, and that the dog would have to be put down.

The doctor brought her dog over to my home. An examination involving palpation of the lumbar spine revealed severe tenderness and muscle spasm of that region. The x-rays films had previously been reported as unremarkable. However, in analysing the films from a neuromuscular-mechanical aspect, I noted that L3 spinous was rotated to the right side, and the disc was bulging due to the wedging of the vertebral body on the opposite side. I explained this to the dog's owner and she was happy for me to treat her pet.

To quieten the dog the owner gave it an injection of Valium, and we waited for it to take effect.

The dog was placed on her right side, and an L3 adjustment was carried out resulting in a reasonably audible cavitation.

I saw the dog again the next day and it ran to meet me. (Holdway KB. Personal communication, 29 August 2011.)

It can be noted that the health management of animals under chiropractic care is not necessarily limited to spinal adjustments. It can also involve manipulation of the extremity joints, as well as employing some of the more natural therapies such as acupuncture. It can also be in collaboration and cooperation with traditional veterinarians.<sup>37,77</sup>

### Summary

- *"Anecdotes are powerful tools that humans use to make decisions."*
- *"Ignoring or under-estimating the role of anecdotal information in health care decisions is likely to hinder communication among decision makers, and to retard their uptake of research evidence."*
- *"Anecdotal evidence should not be considered a replacement for; but as a complement to formal research evidence."*
- *"If evidenced-based health care is to meet its potential, the important role of anecdotes must be acknowledged, studied and utilized."*<sup>71</sup>

By presenting these anecdotal histories, it is anticipated that in the absence of formal research they may assist in representing the state of animal chiropractic, further endorse the value of spinal care and the importance of the vertebral subluxation in health care. The apparent clinical results reported in these cases would tend to suggest that there is not a *functional overlay or placebo effect* involved.

There have been reports in chiropractic publications over the years regarding the role of spinal adjustments in vertebrate health conditions.<sup>17-19,22,25,42-44,78-81</sup> We also noted a series of

anecdotal case reports on animal websites.<sup>9,14,19,20</sup> Again, the range of conditions<sup>22,58-60,63</sup> and the variety of quadrupeds mentioned are remarkable.<sup>9,13,15</sup> However, perhaps two of the more detailed reports were found in a chapter on chiropractic animal care in a veterinary textbook – one an equine case study, the other a canine case report.<sup>59</sup> This has been followed by a more detailed study of the utilisation of allied health therapies for performance horses such as dressage, jumping, and racing. Chiropractic was the most utilised of these professions at 37%, with physiotherapy at 24%.<sup>82</sup>

It is submitted that these anecdotes provide a basic form of *pattern recognition* where "the provider uses experience to recognise a pattern of clinical characteristics."<sup>83</sup> It can be defined as "*a method for evaluating alternative diagnostic hypotheses that yields true probabilities; and a framework that should facilitate unsupervised learning of medical knowledge and the integration of medical diagnosis with other ... applications.*"<sup>84</sup> Wakefield states that "*pattern recognition has been a fundamental part of good medical practice and essential in the detection and description of disease syndromes.*"<sup>85</sup>

### CONCLUSION

This paper is not presented as formal scientific evidence, it is intended as a presentation and sharing of observations. However, the evidence of influence and efficacy of vertebral adjustments as reflected through these anecdotal histories appears compelling.

The emergence of this relatively new profession – Chiropractic Veterinary Science, appears to be firmly established and well accepted by the public. The inter-professional collaboration and co-operation between the two professions is also most positive.

The types of anecdotal conditions reported tend to counter claims that chiropractic care may be successful only as a placebo effect, or that spine-related disorders may be psychosomatic. We found no scientific evidence to support either theory.

It appears that anecdotal reports on animals are the primary source of evidence that is currently available. It is to be trusted that this is an early step towards establishing a sound research base. The research can begin with similar fundamental clinical findings.

It is apparent in the cases presented, and as noted in the texts by Kamen,<sup>42-44</sup> that subluxation disorders in animals would seem to be related to neurological and somatovisceral sequelae, analogous with similar neurovertebral processes to those in humans.

A call is hereby made for the compilation of additional anecdotal evidence of spine-related disorders in all vertebrates. This is made with the hope and expectation that it will foster formal levels of research.

*"A man's own observation, what he finds good of, and what he finds hurt of, is the best physic to preserve health."*<sup>86</sup>

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