

pastern, coffin bone and navicular bone. Horses with navicular syndrome or heel pain have specific patterns of disease on the navicular bone as depicted by the arrows shown. Changes commonly noted in affected horses include:

- Elevated number of or abnormally shaped lucent zones along the distal or sloping borders of the navicular bone
- Poor definition between the palmar cortex and medulla due to subcortical sclerosis
- Crescent-shaped lucent zone in central eminence of flexor cortex of navicular bone
- Enthesiophyte or calcium formation on proximal border
- Asymmetrical shape
- Proximal or distal extension or flattening of the flexor border

Medical treatment options for chronic episodic foot pain over the years have included special podiatry techniques, pain management with non-steroidal anti-inflammatory medications or NSAIDs such as Banamine, Equioxx, Previcox or Phenylbutazone as well as coffin joint or navicular bursae injections with steroid (e.g., triamcinalone) and hyaluronic acid preparations. Unfortunately in many cases these options with repeated use fail to return horses to their original level of athletic performance due in part to not addressing the underlying disease process.

A rather new approach which is proving to be superior is the use of these standard modalities in combination with a new class of drugs called bisphosphonates (e.g., OsPhos or Tildren). These belong to a class of drugs used in people for over 40 years to combat the effects of bone loss seen with osteoporosis. This class of drugs targets the cells in bone known as osteoclasts which reabsorb bone. In navicular disease these cells are activated with chronic

repetitive concussion and further the loss of bone density to the navicular bone leading to pain and further inflammation. Chronic inflammation and upregulated inter cellular messaging over time leads to bone loss and changes in the structural make-up of the navicular bone. Ultimately left unchecked, concussion and osteoclast recruitment lead to osteoporosis, bone edema or fluid retention and a loss of structural integrity which are



*The diagnosis for Colonel K was pretty clear as shown on the radiographs. He had several lollipop lesions and sclerosis (increased density) of both navicular bones with a substantial abnormal flattening of the flexor surface of the navicular bone.*



definable as the radiographic changes seen on x-ray and MRI systems used in equine sports medicine.

In the end confirming the source of a horse's pain as it pertained to the heel in this case and obtaining accurate diagnostic information led to a better understanding of a successful treatment option including OsPhos. To date it has also allowed for measurement of his progress, both under saddle and comparatively with digital imaging.

While temporarily abolishing pain with the use of NSAID and steroid pain relievers is important, preventing further bone resorption is proving to be equally important in many cases. Appreciating a different element of navicular disease's pathophysiology allows one to understand why this relatively novel treatment modality may be synergistic with other methods.

As a rule the road of diminishing returns is dependent on many factors. Digital x-rays and MRI technology have enabled a better, more complete understanding of the bone and soft issue ligament and tendon components to the foot and this age-old disease affecting performance horses. They have greatly reduced the number of horses undergoing neurectomy or surgical severance of the nerves carrying sensation to the back of the foot.

Rather a synergistic approach to balanced farriery and new and old medical options are being used to lengthen the interval between steroid injections or abolish their need altogether, allowing for a better prognosis and return to athletic potential in our equine athletes. The expanding use of the bisphosphonate OsPhos has shown improvement in cases similar to Colonel K and anecdotally seems to provide clinical relief for four to six months.