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DONKEYS AND MULES AS SURGICAL PATIENTS

- SPECIAL CONSIDERATIONS -

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The mule and donkey in North America are intertwined through history with veterinary medicine. During the pre-industrial age of America they represented a major source of "horse power" to the labor of mankind. They were common as veterinary patients until their populations started to decline after the 1930s when motorization replaced their work function. Only since the mid 1980s have they began a significant return to veterinary medicine, this time as a companion animal rather than work beast.

As surgical patients, donkeys and mules have distinct differences from horses. These differences stem primarily from specific physiologic and behavioral attributes. That is not to say that mules and donkeys do not suffer many of the same diseases or injuries of the horse! With few exceptions they are afflicted with the same maladies as the horse. There are however certain conditions that are more prevalent in either the mule or donkey. It is more difficult to prove this claim with scientific analysis due to lack of large population comparisons. As there are disease differences within breeds of horses, there is a variation within breeds of donkeys and crosses of mules. As humans have certain diseases that are related to occupations, so does the equine. All factors being equal the "use" of a horse, donkey or mule will have a greater influence on disease patterns than specie differences. For successful treatment of donkeys and mules the veterinarian must appreciate; the medical, behavioral and use differences -within and between the breeds- as well as the vast similarities of the equine genus.

In the authors experience mules are presented most commonly for the following conditions; castration, ovariectomy, sarcoid, other neoplasia (e.g. sarcoma, lymphoma) and degenerative joint disease. Of course the common neutering of mules is related to behavior in a sterile animal whereas the sarcoid issue is a downside of heterosis. It is known that genetic predisposition to sarcoid tumors exists and it is not a far stretch to theorize that a small cellular glitch could be present in mules. This predisposition could be inherited from the donkey, the horse or both. The occurrence of other tumor types may relate as much to the long-lived nature of the mule as anything else. Most the authors patients with non-sarcoid tumors were in mules 18 years of age or older. The type of degenerative joint disease encountered is also attributed to mileage and terrain as most of the mules seen by the author are ridden in rough and rocky mountains. In a German study of pack mules used in the mountains, the most common cause of rejection for use was degenerative joint disease of the tarsus. The diseases of the mule like that of the horse is determined most by type of use, genetic makeup and environment, followed by age. Prevalent diseases of the donkey include neoplasia of the skin; again most notable are sarcoid and Jack Sores (i.e. habronemiasis of the flexor surface of the hock). The next most common owner complaint involves diseases of the limbs. In the northwestern USA lush spring grass and moist winters contribute to diseases of the hooves. Laminitis and pedal osteitis are not uncommon in donkeys kept as companion animals. Flexural deformities can develop secondary to the painful feet. Surgical treatment of the flexural deformity will be disappointing if concurrent treatment of the laminitis is unsuccessful or if the laminitis goes unrecognized. Angular limb deformity is encountered especially in the minature donkey. Castration of the donkey is best performed including ligation of the testicular artery. Reported bleeding problems post castration may be as much due to difficulties with restraint and anesthesia as any anatomic or physiologic difference in testicular vascularity.

The donkey has been said to be the soul of the mule. An optimist would say a mule gets, speed,

spirit and size from the horse and intelligence, stamina and physical durability from the donkey.. The donkey has several known differences from the horse that affects its treatment and its contributions to the mule. The visual difference between a donkey and a horse is obvious but the finer anatomic and physiologic differences are less apparent. A case in point is in the surgical treatment of flexural deformity of distal interphalangeal joint. In the donkey the inferior check ligament (ICL) connects to the deep digital flexor tendon (DDF) and the superficial digital flexor tendon (SDF). In the horse the ICL attaches only to the DDF. It is important that both attachments be transected for successful treatment of the donkey. Another difference with dinical significance is the location of the nasal puncta of the nasolacrimal duct. In the horse the nasal puncta is located on the floor of the nostril at the mucocutaneous junction. In contrast in the donkey it is located in the cutaneous portion of the lateral nostril wall. The mule is variable in location of the nasal puncta and the individual can vary between nostrils. An area of active research has been in anesthesia of the donkey and mule. It is reported that xylazine and ketamine dosages for standard and mammoth donkeys are similar to horses (except for slightly more rapid metabolism of ketamine). In contrast, mules and miniature donkeys are reported to need increased dosages of sedatives or combinations for acceptable effects. A regime for mules is, xylazine (1.6mg/kg IV) or detomidine (0.03mg/kg IV) with ketamine (2.0-3.0 mg/kg IV). For minature donkeys, xylazine (1.1 mg/kg IV) with butorphanol (0.04 mg/kg IV) followed by Telazol -tiletamine hydrochloride + zolazepam hydrochloride- (1.1-1.5 mg/kg IV) will provide about 20 mins of anesthesia. It has been demonstrated that donkeys are more sensitive to guaifenesin requiring about 40% less than horses to produce recumbency. Responses to and uses of inhalation anesthetics are similar to the horse. A major concept that should be appreciated by every practitioner is: the response to sedatives, tranquilizers and anesthetics is directly related to the mental and physiologic state of the animal. Be that debilitated or excited it will have an effect, down or up from “normal dosages”. Wild or feral horses require 1.5 to 2 times the normal IV dose or 3 times the IM dose for sedation or anesthesia. In the authors opinion it is much easier to elicit mental and physiologic resistance in the build up to sedation and anesthesia in the mule and donkey than it is in the horse. Not only is it easier to trigger their mental awareness that something is awry but it is much more difficult for a veterinarian to detect how aware and prepared the mule is to resist. This combination of the mule being two steps ahead and being prepared is a much larger component of a poor response to sedation than any inherent metabolic difference. It behooves the practitioner not to change routines for the mule and donkey and to exude calmness if maximum effectiveness of sedatives if to be achieved. When a veterinarian encounters a mule or donkey that is resistant to sedation it is better to try another day than to force a losing proposition. This may not be an option in emergency situations but in non-emergencies one should stop if the reaction to sedation is sub-optimal.

Sym. 8.1/2

The tendency for mules and donkeys to mask their true condition has other implications for the surgeon. It dictates that a stoic stance may not indicate all is well and closer monitoring for normal behavior and clinical signs are indicated. It also means that detecting reactions to typical clinical examination techniques (e.g. flexion test, hoof testers, percussion, digital pressure etc.) can be more difficult. Donkeys are known to be able to lose 12-15% of their total body water before dehydration is reflected in the packed cell volume. Close observation and measurement of water and feed intake and fecal and urine output is of increased importance. Donkeys are more prone to develop hyperlipemia at times of stress and reduced food intake. Remember to monitor for this and institute early intervention if plasma lipids increase. Postoperative pain management is also made more challenging by this tendency to mask discomfort and illness. It is relevant to point out that flunixin and phenylbutazone is metabolized more rapidly in the donkey and twice a day administration is suggested.

Be it placing an IV catheter or drawing a blood sample in preparation for surgery special techniques are often needed in restraint of the mule and donkey. A twitch or lip chain is used in the donkey and mule as it is in horses but may not be appropriate for every situation. Mules and

donkeys have a strong sense of self-preservation and are less apt to injure themselves when restrained. However they may be more apt to injure those that try to use the restraint! Often a mule or donkey can be snubbed up to a strong post without fear of them trying to flip over or throw themselves on the ground as many horses would. That said these special restraint methods should only be used by those familiar with there application, Using them unwisely can result in failure to achieve the goal at best and injury to man or beast at worst. A restraint technique useful in mules and donkeys is that of hobbles. The one-leg hobble is the most useful but there are times when the two-leg or three-leg hobble is needed. The two-leg and three-leg hobble should only be used on animals that have been trained for such restraint. Veterinarians should be especially respectful of the mule's feet if ever causing discomfort or alarm, the penalty for not doing so can be particularly harsh.

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