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Ultrasonography of mid-metacarpal region of contralateral (un-operated) limb following tendon grafting in equine

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The ultrasonography is an objective means of characterizing tendon and ligament lesions in equine (Reef *et al.* 1990, Marr *et al.* 1993). The present investigation was carried out to evaluate the serial sonographic changes in the contralateral (un-operated) limb after tendon grafting in donkeys. Twenty-six clinically healthy male donkeys, weighing 70 to 90 kg, and aged 3-7 years were subjected to tendon grafting of superficial digital flexor (SDF) and trauma to deep digital flexor (DDF) tendons in the left mid-metacarpal region.

Operated limbs in all the animals immobilized by the application of plaster of Paris splints including pastern and fetlock joints which were kept slightly flexed in order to reduce tension on grafted tendon. A miniplaster cast was applied on the operated limb for another 2 weeks, covering the fetlock and pastern to minimize the tension on the grafted tendon during walk. External co-ptation was completely removed 8 weeks after tendon surgery. Serial longitudinal ultrasonographic examination of the un-operated right (contralateral) limb in the mid-metacarpal region on palmar surface was performed up to 120th post-operative day (POD) using 7.5 MHz linear array transducer in all the animals.

Whenever, a particular limb is subjected to any trauma the animal does not carry the normal locomotion on that limb. This put the other limb under greater strain as a compensatory mechanism. Sonographic findings on the contralateral (right) limb, after grafting of SDF tendon of left fore-limb, in the mid-metacarpal region suggested the presence of anechoic fluid densities between SDF and DDF tendons, DDF tendon and suspensory ligament (SL) on the 7th and 14th POD (Fig. 1 : 14d) indicating stress tendinitis. However, anechoic region indicative of fluid, started decreasing on the 21st POD (Fig. 1 : 21d), but it was still evident on the distal portion of metacarpal region. It further decreased on 28 th POD. On the 42nd POD and onwards up to 120th POD on the anechoic pattern suggestive of fluid was observed in all the animals (Fig. 1 : 42d, 120d). Most pathologic

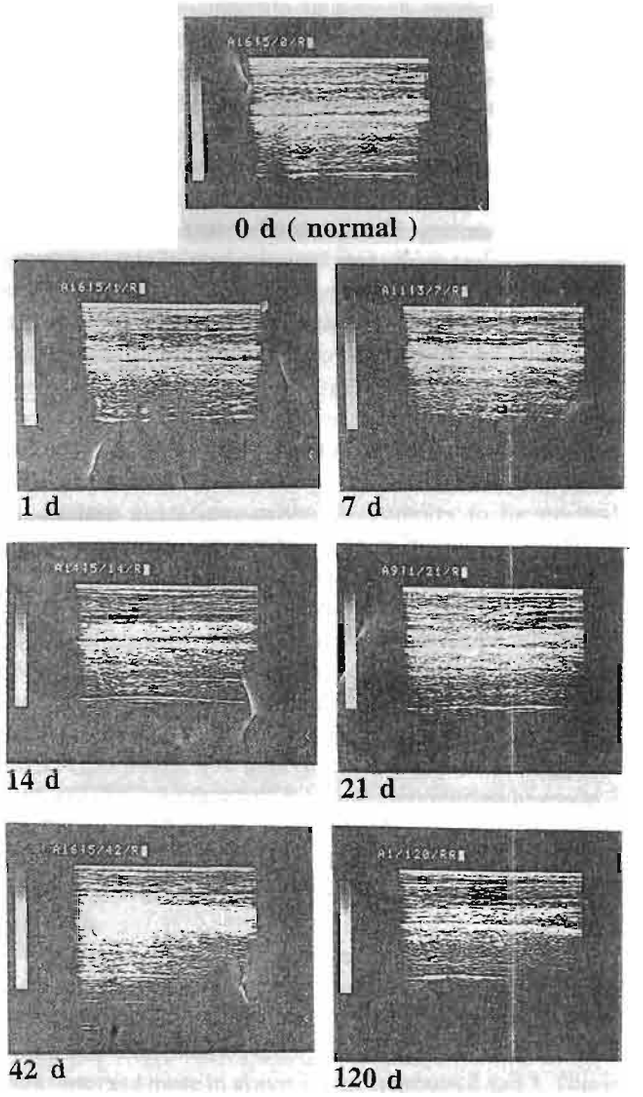

Fig. 1. Serial ultrasonograms (0 to 12 od) of the palmar left midmetacarpal region of contralateral limb.

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states appear completely black on sonogram and as the echointensity decrease the structural defects increase according to the severity of the trauma (Ali *et al.* 1992).

Increased anechoic intensity between SDF and DDF tendons and / or DDF tendon and SL in the contralateral limb may be due to accumulation of inflammatory fluid indicating stress tendinitis and *desmitis* which was also evident from the intermittent increase in the girth measurements of the contralateral limb in similar experiments (Singh 1996). Excessive fluid accumulation around tendons/ligaments could be due to the induced stress as a result of compensation and excessive weight bearing by the contralateral limb during first few days after tendon grafting. Stress tendinities and desmitis due to overloading of tendons and ligaments have been reported earlier (Orsini and Nunamaker 1988). As the animal gradually started putting more weight on the operated limb, fluid started decreasing in the contralateral limb by 3 weeks. However, occasional increase in fluid between DDF tendon and SL observed by this period in operated limb that disappeared by 6 weeks as the animal started putting equal weight on the both fore-limbs. A decreased anechoic area with increased echogenicity of SDF after 2 weeks may be due to disappearance of inflammatory reaction. It is concluded that ultrasonography is helpful for assessing and evaluating the stress-induced injury to the tendons and ligaments which otherwise cannot be actually visualized by any other diagnostic means.

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