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DIPLOPODIA OF THE METACARPUS WITH AGENESIS OF THE PHALANGES IN A FOAL.

(With 7 Figuers)

By

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إزدواج المشط مع غياب السلاميات في مهر

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تم وصف القائمه الأماميه اليسرى لمهر بها تشوه وقصر خلقى تشوهى وبإجراء الفحص الاكلينيكى والاشعاعى والتشريحى إتضح وجود إزدواج فى المشط متشابهين إلى حد كبير فى الشكل والحجم مع تكوين ضعيف للأجزاء العضليه الوتريه والعظام. وجد أيضاً إنقباض فى مفصل الرسغ مع غياب العظمه الرسفيه الإضافيه كما اتضح أيضاً من الفحوص السابقه غياب العظمه الزورقيه.

DIPLOPODIA, METACARPUS, AGENESIS, PHALANGES & A FOAL

SUMMARY

A 4 month old male foal with a congenital deformed and shortened left fore - limb was described. Clinical, radiographic and anatomical studies showed reduplicated metacarpus, similar in shape and size with agenesis of the phalanges. Ill developed of the musculotendineous structures and bones, flexion contracture of the carpal joint, with agenesis of accessory carpal bone was evident. There was also agenesis of the navicular bone.

CASE HISTORY

A 4 month old male foal was brought to the surgery clinic with a congenital deformed and shortened left fore -limb. The deformed limb was severely flexed, pointed backward flexion contracture of 45 degrees of the carpal joint, with limitation of movement. The musculo-tendinous structures of the limb were severely atrophied and ill-developed. Walking was also difficult.

A separate long bone covered by a separate skin (Fig. 1), originating from the upper medial proximal third of the radius and ending at the level of the carpal joint with a long hair was detected. The skin at the palmar aspect of the carpal joint formed a broad fold attached with the skin of the metacarpus. The hoof was elongated and deformed.

Radiographic examination of the left front leg showed, reduced ulnar shaft, presence of a short flat dense bone incompletely fused with a long bone, bending and twisting later with double curvature. It is similar in shape to the metacarpus. The distal end of this bone appeared articulating with a small sharp conical bone (Fig. 2). Contrawise, radiography of the contralateral right leg revealed, no remarkable radiographic changes (Fig. 3 & 4).

The deformed limb showed curvature of the mid shaft of the radius with flexion contracture of the carpal joint with agenesis of the accessory carpal bone. The joint spaces were ill-defined. The metacarpal bone appeared reduced in size and length (dysgenesis) without medullary cavity and isbending. Complete absence of the small metacarpal bones II & IV. The proximal and distal epiphysis were ill-developed and deformed. The fetlock joint was ill-developed with agenesis of the proximal sesamoid bones. The PI and PII were hypoplastic, incompletely fusion, and abnormally developed. The PIII was

hypoplastic. Complete agenesis of the distal navicular bone was evident.

The filly was euthanaied and the left fore limb was retained for anatomical study. It revealed that, the musculotendinous structures were ill-developed. The superficial flexor tendon and common extensor tendon were not present. The deep flexor tendon and interosseeus tendons were detected as thin tendinous bands (Fig. 5).

The ulnar bone was deformed and reduced in size (Fig. 6). The anconeal process was also ill developed. The medial and lateral coronoid process were not present. withincomplete development of the ulnar shaft. The proximal and distal articular surfaces of the radius were deformed. The sagittal articular ridge was shallow proximally. The processus styloideus lateralis was not present and the medial one was ill developed. The identical metacarpus was connected proximally with a short flat bone inverted "L" and distally with a sharp pointed conical boneds. The flat bone was attached with proximal medial third of the radius by fibrous tissues (Fig. 7).

DISCUSSION

Diplopdia is manifested by partial duplication in the foot *(NARANG et al., 1982).* In the present study the foal appeared with the two bones of the leg which are considered to be metacarpal, as they were almost identical in size and shape. The duplication of the two metacarapi proposed a partial duplication of the left foot i.e. a case of "diplopodia" Furthermore, the anatomical and radiographic findings of the small conical ill- developed bone distally, indicate inadequate phalangeal development and agenesis. Therefore the formation of an entire extrafoot is never attained.

NORDON and De LAHUNTA (1985) reported that, the critical stage of limb development in the bovine faetus is from day 24 to 40 of gestation. At this stage the limb tissues are undergoing early differentiation and are most suseptible to disruption. Therefore any insult at this time of development, results in a structural malformation due to abnormal differentiation. It could be suggested a possible embryological basis for diplopodia of the metacarpus in a foal.

Congenital diplopodia of appendicular skelton in man is of considerable significance and was carefuly recorded, *(MYSAREKAR and LOHOCKARE, 1970; JONES et al., 1978 and NARANG et al., 1982).* References in domestic animals particularly horses were not documented as far as we know.

Congenital phalangeal hypoplasia and agenesis of the navicular bone in a foal has been described by *MANSMANM (1982); MODRANSKEY* et al., *(1987); BERTON and AANES (1984)*, adactylia (complete agenesis of the limb distal to the radius) and polydactylia (partial or complete duplication of digitis or digital parts) *(LEIPOLD* et al., *1971)*.

According to *HUTT (1968)* congenital defects of bones and joints may be caused by environmental or genetic factors or by interaction of both. No causative factor was traced in the case described. Hypoplasia and anatomical malformation, demelia of the metacarpus with bending and twisting of it were considered congential in nature.

Accordingly the sporadic occurrence, and the exact aetiology of appendicular skelton anomalies in the horse have not been frequently documented and this is why the case described deserved to be recorded.

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LEGENDS

fIG. 1: The left fore limb of a foal showed flextion contracture of the carpal joint and the limb pointed backward.

Fig. 2: Lateral radiograph of the limb revealed double metacrpi (arrows), agenesis of proximal sesamoids, distal sesamoid and the II and IV small metacarpal bones.

Fig. 3: Lateral radiograph (radius and ulna) of the right limb showed no radiographic anomalies.

Fig. 4: Lateral radiograph (metacarpus and digits) of the right limb revealed no radiographic anomalies.

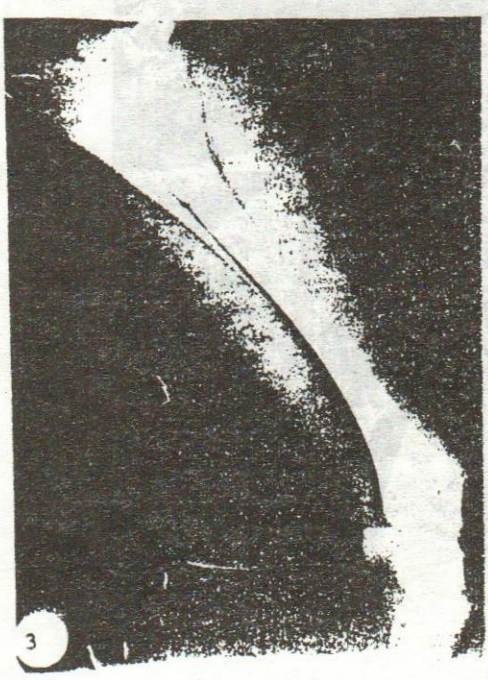
Fig. 5: Dissection of the limb showing congenital diplopodia of the metacarpus, ill developed musculo-tendineous structures and bones.

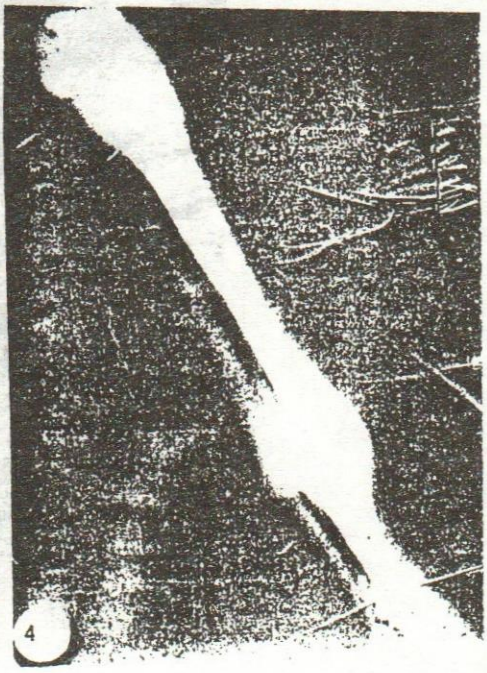
Fig. 6: The ulnar bone was ill developed and the ulnar shaft was reduced.

Fig. 7: The diplopdia metacarpus attached proximally with invereted "L" flat bone and distally with small conical pointed bone.

1

DIPLOPODIA, METACARPUS, AGENESIS, PHALANGES & A FOAL





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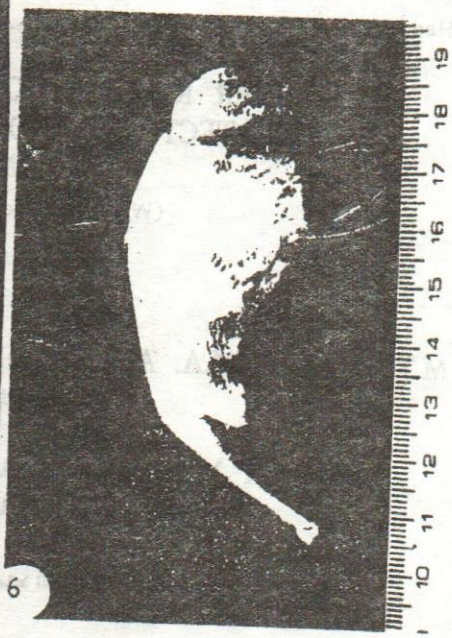

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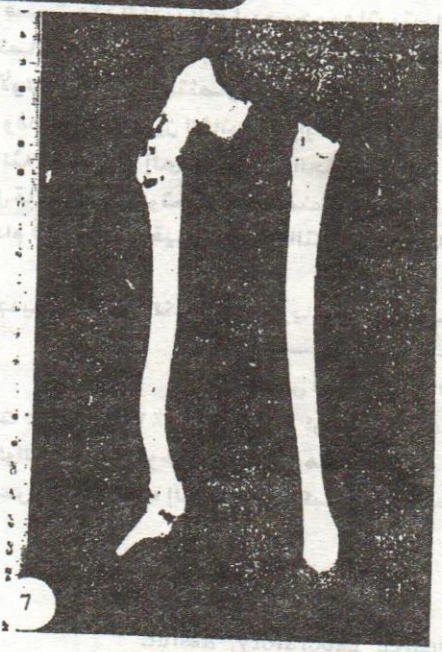

7