Splints

-The typical splint is an exostosis on the small metacarpal or metatarsal bones. It is most commonly localized on the medial aspect of the small metacarpal bone & the lateral aspect of the small metatarsal bone.

-Splints occurs in young horses & seldom seen in horses over 7 years of age.

Etiology:

1. Young horses put early on work.
2. Bad conformation (Bench knee).
3. Direct trauma
4. Sprain of the interosseous lig. or collateral ligs.

Location:

1. *Intermetacarpal splint:* found on the inner surface of the proximal 3rd of the metacarpus or the middle 3rd of the metacarpus between the large metacarpal bone & medial splint bone. In most cases it is accompanied with the posterior form.

2. *Posterior metacarpal splint:* situated on the posterior border of the splint bone mainly on the middle 3rd of the splint bone.

Location:

3. *Deep metacarpal splint:* is found on the palmer aspect of the proximal extremity of the 3rd metacarpal bone at the origin of the suspensory lig. It can be only diagnosed with X- rays.

4. *Knee splints*, the bony exostosis involved the head of the small metacarpal bone & encroach over the palmar & dorsal surfaces of the 3rd metacarpal bone & the distal raw of the carpal bone (Carpo – metacarpal articulations.)

5- *Traumatic splint,* caused by trauma of any kind at the metacarpus. The trauma causes infln. & lameness which subsides later on & the animal go sound. It is mostly found on the lateral aspect of the medial splint bone.

Signs:

A) Presence of bony enlargements:

1.Simple splint (presence of only one bony exostois on the meta carpus).

2.Knee splint (presence of exostosis on the carpo-metacarpal articulation)

3.Chain splint (presence of chain of exostosis along the metacarpus)

4.Rod or beg splint (presence of transverse exostosis under the suspensory lig.

B) Splint lameness:

1. The horse goes sound at walk & lame at trot.
2. Increase of lameness on hard ground.
3. Imperfect flexion of the knee joint.
4. No lameness with simple splint**.**

Diagnosis:

1. History (young horses)
2. From signs (feature of lameness).
3. Nerve block & radiography.

Prognosis: knee & rod splints are unfavorable.

Treatment

1.Rest.

2.Cold application & pressure bandage in fresh cases.

3.Cauterization & blistering of the bony enlargements (needle – point firing).

4.Surgical removal of the exostosis.

5.Neurectomy in knee & rod splints.

Affections of the fetlock and digits "Osselets"

"Inflammation of the fetlock joint"

It is a condition of synovitis & capsulitis at the dorsal aspect of meta carpophalangeal (fetlock) joint.
Ossification can develop in chronic cases.

Forms of arthritis:

1. Acute serous aseptic arthritis "green osselets"

2. Chronic deformed arthritis "Osselets"

3. Septic or purulent arthritis.

Etiology

1.Trauma (concussion).

2.Bad conformation (upright pastern).

3.Purulent form can result from penetrating wound.

Signs:

1.Lameness.

2.Local signs of infln. (Swelling at the front surface of fetlock).

3.Passive flexion of the joint induces pain.

Treatment

- Rest, cold application to reduce acute arthritis.
- Intra-articular inj. of corticosteroids.
- Pressure bandage applied to restrict the movement of the joint.
- In chronic cases: Blistering & firing.

Sesamoiditis

infln. of the proximal sesamoid bones, the suspensory & intersesamoidin ligs. may also be affected & show calcified areas.

Fracture of the phalanges

more common in forelimbs than hind ones. Rest & exteramedulllary fixation may give good result

Ring bone "phalangeal exostosis"

The presence of exostosis on the phalangeal bones

Classifications

a) True ring bones (articular & peri-articular).

1.High (pastern joint) 2. Low (coffin joint)

b)False ringbone (non- articular).

1.High (1st phalanx).

2. Low(2nd phalanx).

Etiology:

A) False ring bone: is the result of osteoperiostitis which is traumatic in origin → blow, kick, and the inflammatory exudates becomes ossified to form exostosis.

B) True ringbone

1.Predisposing causes as:

- Bad conformation (upright pastern)
- Improper shoeing.
- Young horses put early to work.
- Hereditary factors.

2. Exciting causes:

- Trauma
- Sprain of the collateral ligs.
- Healed fractures & osteoarthritis (dry arthritis).

Signs:

1. Presence of temporary lameness in false ringbone.
2. Presence of permanent lameness in true ringbone.
3. Presence of bony enlargements around the phalanges.

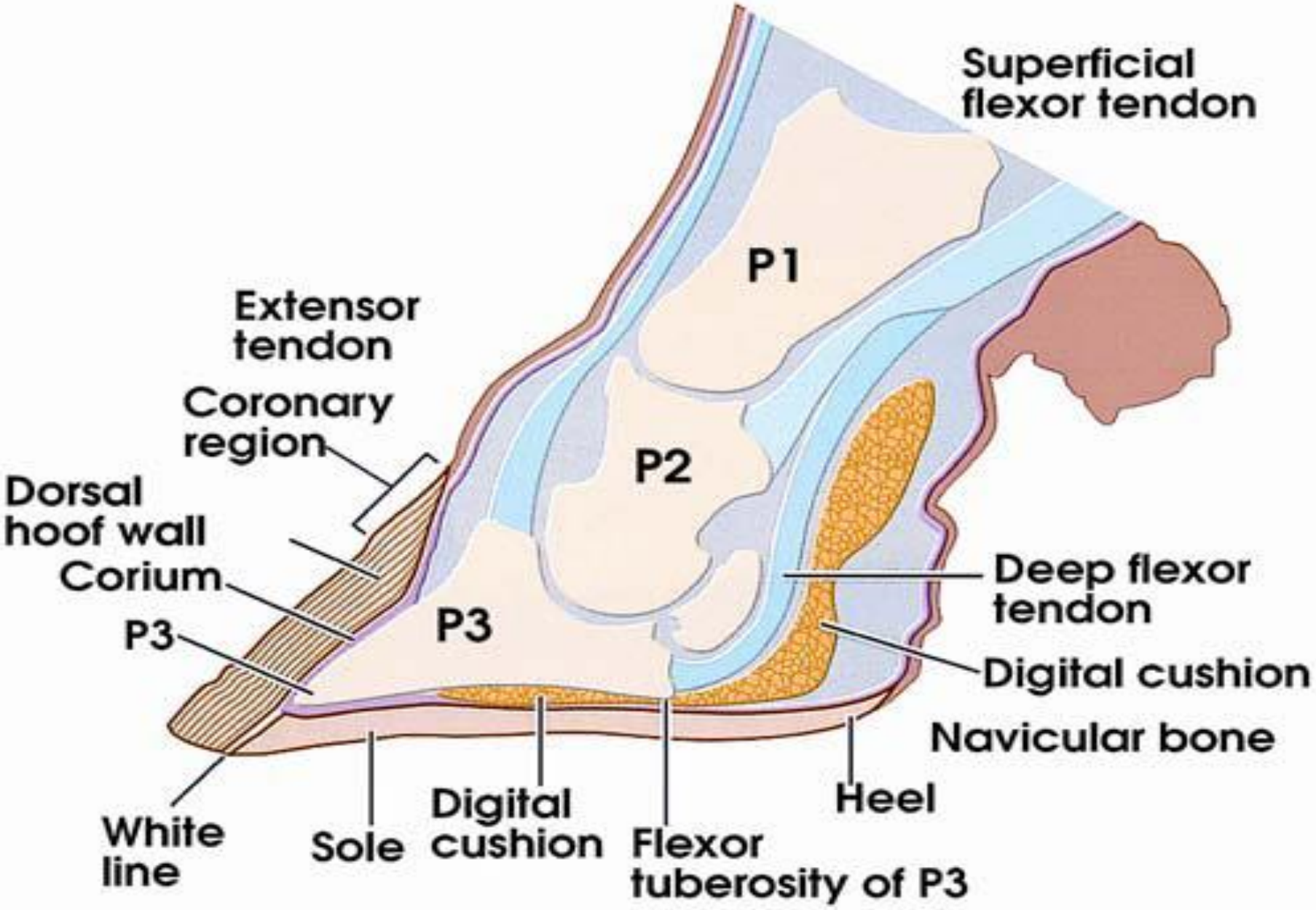
Diagnosis:

Depends mainly on symptoms, palpation & X- ray as well as nerve block (plantar n.).

AFFECTIONS OF THE CLAWS

ANATOMY:

The cow's foot is very similar to that of the horse except the bones, tendons, ligaments and joints are doubled from the fetlock joint down ward. The distal end of the large metacarpus or metatarsus is bifurcated to articulate with the two sets of phalangeal bones . There is no frog as in the horse and the heels are thick & covered with elastic tissue (bulb of the heel).


Superficial flexor tendon
P1
Extensor tendon
Coronary region
P2
Dorsal hoof wall
Corium
P3
Deep flexor tendon
P3
Digital cushion
Navicular bone
Heel
White line
Sole
Digital cushion
Flexor tuberosity of P3

PANARITHIUM " Infectious pododermatitis "

"Foot rot, foul claw or fowl in the foot“

It is an acute, seldom chronic inflammatory condition in the region of the proximal end of the claw & the surrounding parts. It is accompanied by phlegmone, necrosis, pus formation & fistulae.

In this condition, the m.os gain entrance through wounds of the skin at the region of the claw.

The responsible m.os. are:

1-Actinomyces necrophorus.

2-Corynebacteria.

3-Anaerobic streptococci.

Etiology:

1-Walking on stony roads → wounds on the sole & interdigital space.

2-Standing on wet bedding for a long time → maceration of the horn & skin.

3-As a complication to foot & mouth disease.

4-Nutritional deficiencies especially vit. A. & trace minerals.

Classifications :

a) According to the location of the lesion :

1-Interdigital vegetative dermatitis: found between the claws.

2-Panarithium of the coronet. *3-Panarithium of the heels.*

b) According to the affected tissue :

1-Cutaneous panarithium: when purulent infl. attacks only the skin of the interdigital space.

2-Subcutaneous panarithium: coronary & subcoronary phlegmone.

3-Tendinous panarithium: when infection penetrates deeper to reach tendons & its sheath.

4-Panarithium osseum: when infection reaches the 3rd or 2nd phalanx causing ostitis & osteormyelitis .

5-Articular panarithium: when infection reaches the pedal joint after penetrating & destroying the joint capsule.

Symptoms

1-Lameness varies from mild to severe according to the severity & seat of infection.

2-Abduction of the affected limb on walking.

3-The animal lies down & unwilling to get up.

4-Depression in the appetite & low milk yield.

5-In advanced cases, high temperature with high respiration & pulse rate & the general condition of the animal is affected.

6-Local manifestations differ according to affected area :

In the cutaneous form: there is a tumour – like projection at the ID space, which becomes ulcerated leading to severe pain.

In bulls there is impotentia coeundi. All signs of infln. appears at the coronet.

When the S/C tissues are affected there is red & hot painful swelling either on the ID space or on the coronet & heels. A yellowish watery exudates comes out through the skin.

Symptoms(cont.):

-Some cases present abscess formations or even fistulae discharging purulent offensive materials. These fistulae may reach the bone causing its necrosis.

-There may be necrosis of the ID skin with formation of unhealthy hypergranulation tissue & may lead to separation of the wall of the claw.

-When the tendon sheath or claw joint is affected, synovia mixed with pus may come out from the fistulae.

-When there is total necrosis of the flexor tendon there will be dorsal hyperextension of the claw.

Treatment:

1-In case of interdigital growths, it should be removed surgically, dressed by antibiotic or sulpha powder then bandaged. After the operation, it is advised to apply a closed shoe for both claws together to prevent their separation.

2-For superficial infln. of the ID space, a dry bandage with tar , after cleaning with hot antiseptic fomentation is of great value .

3-In cases of superficial necrosis, the demarcation can be accelerated by using cod liver oil & a bandage, in the same time the animal can be injected with sulfonamides & antibiotics systemically.

3-In complicated cases, amputation of the claw or resection of the claw joint is indicated.

Rusterholz ulcer
Pododermatitis circumscripta septica
Specific traumatic ulcer of the sole

It is a circumscribed loss of horny sole, the loss exposes the corium, the defect in the horn extends from the solar corium to the weight bearing surface. The lesion typically is located near the axial border of the heel – sole junction of the lateral hind claws. Sole ulcer rarely occurs in the front claws & then usually affects the medial claws. Bilateral involvement is common, but the lesion is more advanced in one claw.

Etiology :

it may be due to:

1-Exostosis of 3rd phalanx

2-Tension of the DFT.

3-Primarily associated with herd management, the flooring & the diet.

Symptoms

1-Animals are not quite during feeding or milking.

2-Sudden & severe lameness.

3-Stanchioned animals usually arch their backs, so only the toe bears weight on the edge of the manure gutter.

4-As the condition often involves the lateral claw of hind foot, the animal usually walks & stands base wide (abduction) to relieve pressure on the lateral digit.

5-Severe pain induced by hoof tester when applied over the bulb to sole junction of the affected claw.

On trimming the foot, hypergranulation tissue may appear a crack in the sole or merely a discolored area of the sole.

Treatment:

The aim of the treatment is to reduce or prevent the formation of granulation tissue & the infection of the deeper structures. This can be done by the following :

1-Thinning of the edges of the ulcer with excision of the granulation tissue.

2-A powder containing cupper sulphate, antibiotics, tannic acid is applied to prevent formation of over granulation tissue, to guard against infection → to control hemorrhage.

3-The claw is bandaged & the other sound claw should be elevated with a wooden block cemented to the sole.

4-Treatment is stopped after keratinized layer develops on the surface of the ulcer.

5-If pedal joint is involved, amputation of the claw is the most economical treatment. Although drainage & ankylosis can be considered in valuable animals.

N.B: Rusterholz ulcer takes 3-6 weeks to heel.

Pododermatitis diffusa aseptica

(Laminitis or founder)

It is a diffuse aseptic inflammation of the sensitive laminae of the claws. The fore feet, the hind feet, or both can be affected. Laminitis can be either acute or chronic.

Acute form

-Acute laminitis occurs sporadically in dairy & feed lot cattle.

-In dairy cattle the incidence is higher two to three months after parturition.

-Cattle under three years old are most frequently affected.

-Laminitis may occur as a primary condition but more often occurs as a secondary condition to rumen acidosis, metritis, retained placenta, mastitis & acetonemia.

Acute form:

-Severely affected cattle show stiffness, pain & reluctance to move.

-They stand with back arched & feet placed more beneath than in the normal stance.

-In some cases, the fore feet are placed forward, and the fore limbs can be crossed.

-Affected cows will lie down much of the time, perhaps in lateral recumbancy with paddling of the hind limbs.

-Rising is difficult, muscle tremors & sweating are observable, and the hind feet trend when standing.

-In severe cases, pulse & respiratory rates are increased.

Acute form:

-A patient with acute laminitis display swelling & tenderness above the coronet & over heel bulbs, the veins in the lower limbs are distended.

-Although difficult to palpate, the digital arteries might pulsate.

-Appetite & milk production might not change unless the patient is affected by an associated disease.

-The horn of the sole might become soft, yellow & waxy.

-Haemorrhage or bruising appears beneath the sole in some cases.

Chronic form

- Changes associated with this form are localized in the feet, especially the hind feet.

- Young cases are most commonly involved.

- The claw widens & flattens. The angle of junction of the claw's sole & the wall is small; the white line widens & can hemorrhage.

-The wall becomes concave & parallel horizontal grooves diverging at the heel develop.

- Ventral deviation of the pedal bone can occurs. -The sole thins & softens & hemorrhages appear beneath the cranial portion of the sole.

-The claws become long & misshapen & the pasterns & heels tend to drop.

Etiology :

-Acute laminitis is often associated with toxic diseases, such as mastitis & metritis or with metabolic disorders, such as acetonamia & rumen acidosis.

-Chronic laminitis is probably more closely associated with high grain diets.

-The major microscopic observations of the claw in acute laminitis are blood stasis & hemorrhage resulting in stagnant hypoxia.

-Granulation & fibrosis throughout the corium & the dermal laminae are apparent in chronic laminitis.

-Histamine has been implicated as a causative agent.

-The morphologic changes & clinical signs are not as intense or destructive in cattle as in horses.

Treatment

Acute laminitis :

- The use of NSAIDs & pain killers. Some clinicians use corticosteroids.

- Antihistamines are used early in the course of the disease. early intensive treatment of acute laminitis can prevent or minimize the effect of chronic laminitis

- Associated diseases must also be treated.

Chronic laminitis :

-There is no effective treatment but routine claw trimming reduces the severity of the problem.

-Cattle with chronic laminitis are more susceptible to other claw disease including sole ulcer, white line disease & traumatic injury of the sole.

Pododermatitis septica

-Traumatic injury of the sole.

Causes:

-Traumatic injury to the sole on a rough or rocky surface.

-Bad claw care by more thinning of the sole increases the chance of traumatic injury of the sole.

-The new rough concrete floor is also considered as a cause of the disease along with metabolic disorders which may affect the horn formation.

Signs :

-Severe pain which is often severe enough to cause the animal to be "three – legged lame".

-The bruises can be red or yellow in early stages, but they turn black or blue later.

-The sole can separate, and ulceration develops in some cases.

-The infection confined between the sole → the pedal bone → separation of the sole occurs with severe pain → osteomyelitis is a complication.

-The infection can spread to coffin joint or along the tendon sheaths.

-The foot trim should include the following out of any black lines or puncture wounds which may be encountered. Although these may appear small, they often lead to large sole abscesses.

Treatment

-If the sole trimmed, the resulting tract must be followed out until to provide adequate drainage with application of antiseptic like betadine, antibiotic powder & claw bandage.

-Systemic antibiotics can benefit in cases of lesions in the caudal sole area.

Interdigital Fibromas (Hyperplasia Interdigitalis – corn)

A proliferative reaction of the ID skin and/or subcutaneous tissues. It develops from the small fold of the skin adjacent to the axial claw wall usually; it is localized mainly to the dorsal parts of the skin & may extend to the palmar (planter) parts.

Etiology:

1. Hereditary in heavy breeds

2. Chronic irritation.

Signs:

- A granulomatous reaction may take place after abscess formation & organization.

- A small lesions start to develop following direct irritation of the ID skin which may reach 0.5 – 1 cm 2 .

- The later may get enlarged to be like small Limon size.

- Lameness develops when the lesions is accompanied with ulcerations.

- Severe hyperplasia interdigitalis with ulceration & infection prevent the bull to mount.

Treatment

- Spontaneous healing may occur in small lesions.
- In cases of large sized lesions, surgical excisions of the lesions with its underlying fat are recommended followed by application of zinc sulphate oint. & bandage.


Interdigital Hyperplasia in the left hind limb


Interdigital Hyperplasia

Horizontal claw cracks

or thimbles

It is a crack occurs across the claw wall near the toe in which the distal end of the claw remains partially attached then loosened. The lesion usually affects all eight toes of an animal

Etiology

Traumatic.

Infectious.

Metabolic.

Treatment

The cracked part should be trimmed away.

Vertical claw cracks or Sand crack

It is a vertical fissure in the dorsal abaxial wall of the claw usually affects the fore feet.

-The crack varies in length & may extend to the coronet. -Deep fissure is usually infected & accompanied with lameness.

-Infection may extend to the pedal joint itself. If the coronet is involved, sings of acute inflammation will be evident.

Treatment

When fissures extend from the coronary band to the wear surface, a wooden block should be applied to the normal digit with hoof acrylic. This block prevents excessive pull on the claw wall, as the crack starts to heal.

In superficial cracks, a good claw trimming with shortening the toes is indicated to help relieve abnormal stress on the claw

Claw abnormalities and overgrowths

Corkscrew claw:

characterized by abaxial to axial displacement of the wall where caudal and mid areas of abaxial wall curve ventrally and become part of bearing surface of claw. The toe and axial bearing surface become non weight bearing and there is no longer straight but inclined axially to enter the opposite claw.

Scissor claw

an extensive overgrowth of the both claws with overlapping and frequently seen in the thoracic limb than pelvic limb.

Bent medial claw:

bent of the axial wall of the medial claw toward lateral claw. This abnormality more prevalent in the medial claw of the thoracic limb than pelvic limb.

Claw Hypoplasia:

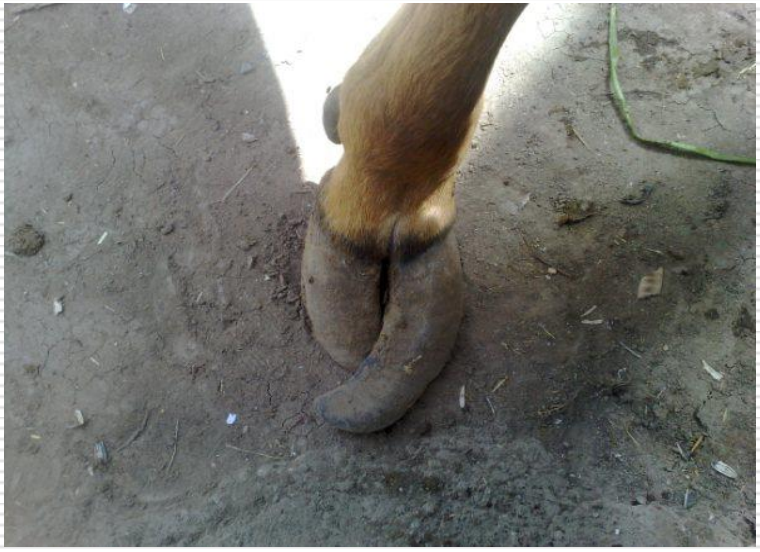
the claw was seen reduced in size.

Beak Claw:

the dorsal wall is concave from the coronet to toe and the weight-bearing borders of the walls are convex from heel to the toe which looks similar in shape to the psittacine beak.

Curved claw:

Concavity of the axial wall of the medial claw either in the thoracic limb or in the pelvic limb.



Overgrown Claws:

An elongation of the claw with increased length of the wall and sole, and a lessened angle (45˚) of the dorsal border with bearing surface.

Lameness

Lameness is an indication of a structural or functional disorder in one or more limbs that is manifested in progression or in standing position.

Classification of lameness

1- Supporting-leg lameness: this is clear when the animal is supporting weight on the foot or lands on it, i.e., pain is evident when the weight is borne on the affected limb. It was caused by injury of bones, joints, collateral ligaments or motor nerves e.g., splint lameness when the animal's leg either support or takes weight.

2- Swinging-leg lameness: this type appears when the animal in motion. It is caused by pathological changes involving joint capsules, muscles or tendons, e.g. sprained shoulder joint. This is manifested in a stiffness or reduction of flexion and extension during forward movement.

3- Mixed lameness: occurs when the limbs in motion or when it is supporting weight. It can be involve any structures affected in the above two types.

4- Complementary lameness : It is caused by uneven distribution of the body weight on the corresponding sound limb that leads to increased stress on it and subsequent lameness

Grading of lameness:

Grade 1: not lame when going straight & inconsistently lame in turn

Grade 2: inconsistently lame going straight & consistently lame in turn

Grade 3: consistently lame going straight & in the turn

Grade 4: Obvious lameness , marked nodding, hitching or short stride.

Grade 5: no weight bearing lameness (3 legged lameness).

DEFINITIONS:

The walk: "it is a four – beat gait". The walking sequence is lateral because both feet of one side hit the ground before the two feet of the other opposite side strike.

The trot: "it is a two – beat gait". Movement of the horse just quickly than walking in which opposite fore & hind feet hit the ground together. the left fore – limb & the right hind limb move together , as do the right fore limb and left hind limb .

The pace: "it is a fast two – beat gait" In which the lateral fore and hind feet strike the ground simultaneously – it is a fasten gait than the trot.

-The Wobble gait: the animal move unsteadily.

- Straddle gait: the animal stand or sit with one limb far a part over something -

Step &Stride: A descriptive terms to determine the distance covered by the feet.

-A step: is the distance between the footprints of the two fore limbs or between the two hind limbs.

It is not the distance between the fore limb &the hind limb. The distance between foot prints of the right & left fore limbs or between foot prints of the right & left hind limbs would be measured.

-The stride: is the distance between successive imprints of the same foot or feet

A stride is therefore longer than a step. The stride consists of 2 phases. The anterior phase is that half of the stride in front of the print of the apposite foot. The posterior phase is that half of the stride in back of the print of the opposite foot.

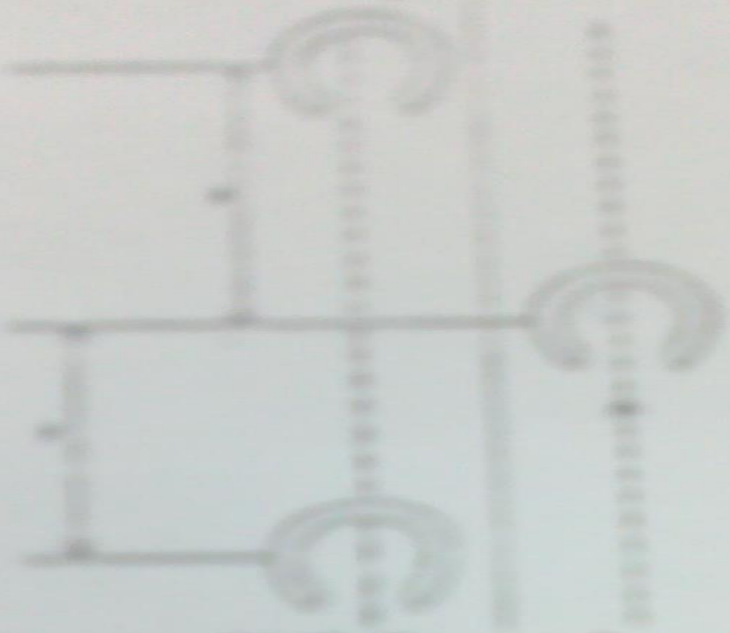


FIG. 4

Step & Stride

Diagnosis of Lameness

It is the art of recognizing the seat & cause of lameness affecting the locomotor system by a disease or injury. The diagnosis is arrived by examining the animal at rest & in motion, by a close visual examination & by manipulating the lame leg and where necessary by applying some aids such as nerve blocks & radiographic examination.

I- History of the case:

-It is important to answer the following questions:

1-How long the animal has been lame?

2-Does the owner know about the cause of lameness?

3-Dose the animal stumble?

4-Does the owner give a history of intermittent lameness?

5-History of previous medication has been applied by the owner?

6-Has the animal been shod recently?

7-Type of work of the animal?

II-Procedure for Examination:

1-Which limb is Lame?

A) Examination of the animal at Rest : Animal in the habit of resting the normal hind limbs alternatively when standing holding the fetlock semi flexed , but he never does with the fore limbs except it suffering from such painful conditions when there is a well marked lameness , the limb is held in several characteristic attitudes when stand :

a) Standing with raised heels & with fetlock and knee or hock flexed, this indicates sprains & injuries to tendons & ligaments of the posterior aspect of the limb.

b) Pointing the foot: when the animal places one fore limb with raised heel, and slightly in advance than the other. This is seen in cases of chronic hoof lameness due to corn & navicular disease.

c) The animal holding its foot off the ground , when associated with acute pain & this is mostly seen in cases of acute septic lesions of the foot & synovial sheaths ,& in severe sprains of the hock joint.

In smaller animals, it is more often associated with fractures and dislocations with injuries to the stifle joint.

d) In cases of lameness of both fore feet, there is continual shifting of the feet or by standing "Knuckled Over" at the knee or at the fetlock joint.

e) If there is severe pain in both fore feet as in acute laminitis they are relieved of pressure by the horse standing with both hind feet positioned well under the body so that they take an additional share of the body weight.

B)Examination of the animal in motion :

To detect the lame limb, it is necessary to observe the animal at walking & trot:

a) Where the injured limb is moved or keeps weight , pain is produced , and therefore to relieve the pain the animal takes a short stride with the lame limb.

b) At walk, the lame limb has the support of the other limbs, but at trot, which is a diagonal two – beat gait "; the lame limb has the support of only the other limb.

c) Fore limb lameness is best seen from front view which is indicated by the lame limb bears weight the head is raised and when the sound limb reaches the ground the head drops & nods .In a trial from the animal to decrease the weight on the affected limb.

d) Hind limb lameness is best seen when the animal trots away , the croup and (quarter –haunch) of the animal is raised when the animal bears weight on the affected side , and lowered when the hind limb of the opposite side bears weight

e) If lameness in both fore limbs the horse having stiff action, it makes short strides, with decreased shoulder action & keeps its feet close to the ground.

f) If lameness in both hind limbs, it is indicated by a shortened strides, wobbling or straddling gait & difficulty in backing.

g) The animal must be trotted on a hard and on a soft surface &trotted up & down a slope, assists in arriving at a diagnosis.

h) All the corresponding joints should have the same limits of flexion & extension.

i) In cases of doubtful lameness, the pain can be intensified by increasing the weight on the limb by having the horse trotted in a circle or turned sharply, so that it leads to the suspected limb.

2-*The Seat of lameness*:

This confirmed by different methods of examination from which:

a) Palpation, manipulation and comparison of the limb with the other corresponding limb:-

1. Individual structures are examined separately
2. Passive movement of the various structures of the opposite limb with the same degree of manipulation; passive movement of the effected joints (flexion, extension, adduction, abduction and rotation) causes severe pain.

In case of doubt, a painful lesion in a joint can be intensified by flexing the joint then immediately trotting the animal a spavin test ".

3. Changes in outlines of the structure due to deformities or swelling
4. Muscle atrophy: Prolonged disuse of a leg seen in all cases of chronic lameness & in cases of nerve paralysis
5. Hotness can be detected with back of the hand; it is often due to an inflammatory process of such affected part. When area of a limb is cold to touch, it indicates an obstruction of the arterial flow.
6. Crepitating sound, in cases of fractures, erosions of the joint cartilage or in joints with osteoarthritis.

b) Local nerve block:
c) Radiology.

d) Intra - articular injections

e) Synovial fluid analysis.

f) Rectal examination: In lameness of the hind limbs, rectal examination may reveal the cause of lameness as fracture of the pelvis.

g) Other methods if available as sonography & arthroscopy.

3. The nature of the lesion*:*

Lameness may be primarily due to abnormal fitting to the shoe on feet with mal –conformation. i.e. not adapting the shoe to the form of particular foot, altering the shoe of foot by paring it to make it approach to the normal. This will interfere with the natural balance of the foots predispose to sprain of the lower joints of the limb.

Shoulder lameness

Is caused by various affection of the region of the shoulder & arm.

- GENERAL SIGNS OF SHOULDER LAMENESS:

1-Marked lifting of the head when the affected limb is being advanced.

2- Imperfect flexion of the affected limb during progression.

3- Short anterior phase of stride.

4- Stumbling during progression.

5- Fixation of the shoulder joint

6- Circumduction to overcome the difficulty of advancing the affected limb.

7- Dropped elbow.

8- Passive flexion of the affected joint induces pain.

The different conditions causing shoulder lameness are one of the following:

1)Shoulder joint : contusions ,subluxation and inflammation

2)Muscles of the shoulder: Traumatic & rheumatic myositis

3)Bursae of the shoulder: infln. of the bursa of the biceps m.

4)Diseases of bones: Fractures, fissures & sometimes malignant tumours.

5)Diseases of nerves: Suprascapular paralysis.

6)Affections of blood vessels, Thrombosis of the axial artery.

7) Affections of the lymph glands : Strangles in horses &Tuberculosis in cattle

Omarthritis

"Inflammation of the shoulder joint"

Etiology: 1- Trauma

2-Infection (navel infection ,brucellosis)more than one joint involved.

Types of omarthritis:

1- Acute aseptic omarthritis

It is an acute aseptic serous infln. of the shoulder joint.

Treatment:

1. Rest is very essential.

2. Cold application followed by hot fomentation &massage to reduce pain in fresh cases

3. Systemic course of anti-inflammatory.

4. Intra-articular injection of corticosteroids & antibiotic.

2-Purulent omarthritis

Mostly seen in foals &rarely in cattle. It may arise due to direct penetrating wound into the joint, or metastatic from septic lesions elsewhere, giving rise to a pyaemic arthritis .In somewhat older cases, the articular cartilage has been eroded, and the two bony ends of the articular surface moving on each other producing a crepitating sound.

Treatment:

1- Intra-articular & systemic injection of antibiotics & sulphonamides daily till the temperature subsided (Crystalline penicillin one million units or crystalline chloramphenicol 0.5gm).

2- Intra- articular injection of proteolytic enzymes such as trypsin, ȧ-chymptrypsin or hyaluronidase to break down the fbrinous or purulent material in the joint to facilitate the aspiration of the contents and irrigation the joint with non irritant fluid. This procedure must be carried out twice daily until the exudates returns to normal.

3- It is contraindicated to use corticoids which lower the tissue resistance against the organism.

3- Chronic deformed omarthritis

It is an osteoarthritis & degenerative joint disease (DJD), it is characterized by deterioration of the articular cartilage & joint surfaces with production of ossify deposits at the periphery of the articular surface &in the periarticular fibrous tissue.

Causes:

1. Continuation of the acute from.
2. Distortion & contusions.
3. Poor conformation as broad breast, narrow or wide position of the forelimbs → over load on one half of the joint.

Treatment:

(1) Blistering of the shoulder using bin – iodide of mercury 1:8

(2) Point firing + blistering over and around the shoulder

(3) Seton are the best treatment, a local anaesthetic is injected S/C at the region of the shoulder. Three incisions are made above the Joint &another three below it. The seton is introduced from above S/C to loosen the skin from the S/C tissue. A piece of gauze is introduced in every incision from above to below then ties the two ends. Introduce few drops of turpentine oil in every opening & repeat every 3-4 days. The seton is left in position for 14 days &then removed. After that, the animal needs 30 days rest, then gentle exercise for few months.

SHOULDER RHEUMATISM

Muscular rheumatism of the shoulder region is not infrequent in equines &cattle.

Etiology:

1. Direct exposure to cold after hard working or exercise.
2. Prolonged exposure to cold & wet.
3. Exposure to cold when the hair of the animal is newly cut.
4. It is sometimes noticed in some cases of haemoglobinuria.

- Lameness usually diminished with exercise & reappear again after rest. Lameness is often intermittent & may pass from one limb to the other. If both limbs are affected, the animal is "tied-in "at the shoulder & backing is difficult.

Diagnosis:

depends upon the nature of the lameness & its diminution on exercise. When both limbs are involved, the affection may be confused with laminitis and navicular disease.

TREATMENT: - Systemic inj. of anti-inflammatory drugs.

- Exercise is very important in all cases.
- Administration of salicylates as sodium or acetyl salicylates
- Massage with liniment.

Bicepital Bursitis

- It is a deep seated bursa between the biceps brachii muscle tendon and the bicepital groove of humerus.

Etiology:

- Severe trauma.
- Infection (open wounds, brucellosis)

Signs: General signs of shoulder lameness

TREATMENT:

- Rest.
- Intrabursal injection of corticosteroids at 4times weekly intervals with systemic inj. of anti-inflammatory.
- In brucellosis, systemic high doses of tetracycline.
- In chronic cases, point firing & counter irritants.
- In septic bursitis, inj. of a mixture of sulphonamids & antibiotic locally & systemically can by used.

Suprascapular Paralysis "Sweeny, shoulder slip"

Suprascapular nerve is a branch of the brachial plexus, it supplies the supraspinatus, which is an extensor of the shoulder, and the infraspinatus, which abducts & rotates the shoulder outwards. The affection is common in horses & dogs & rare in cattle.

Etiology:

- Severe trauma at the point of the shoulder.
- Slipping causing overstretching of the nerve.
- **Signs**: -Atrophy of supra& infraspinatus muscles.

-Outward bulging of the shoulder during full weight bearing (shoulder slip).

-Prominence of scapular spine (Sweeny).

-**TREATMENT:** - Rest of the animal.

- Nerve tonics (B- complex)
- Anti- inflammatory.
- Massage of the atrophied muscles.
- Exploratory decompression of the nerve (removing a piece from the shaft of the scapula 2.5& 1.5 cm under the nerve).

Radial Paralysis
"Dropped Elbow"

- The radial nerve is the largest branch of the brachial plexus. It innervates the extensors of the elbow, carpal & digital joint & the lateral flexor of the carpus (ulnaris lateralis m.).

- Etiology: **-** Trauma of the radial nerve as it crosses the musculospiral groove of the humerus from a blow or sharp or pointed object .

- Fracture of the 1st rib or humerus.

- Prolonged lateral recumbancy on hard ground.

- Overstretching of the radial nerve following hyperextension of the limb.

- **Signs**: The signs depend on the degree, extent & the location of the nerve injury.

1 **-** Inability to advance the affected limb forward

2-Atrophy of the extensors of the forearm and the lateral flexor of the carpus.

3-Loss of sensation of the cranio – lateral aspect of the forearm

4- Dropped elbow &the joint under it (the leg appears longer)

5-Dragging of the affected limb.

In cases of incomplete radial paralysis:

1- The affected limb can bear weight but the muscles may show tremors

2- During progression the limb is taken forward in a semi flexed condition.

if pace is accelerated, the animal stumble and may fall.

CAPPED ELBOW

"Hygroma of the elbow, Olecranon bursitis, shoe boil"

It is common in horses, buffaloes and rarely in dogs. It is characterized by the swelling at the region of the olecranon.

Etiology: **-** Continuous Contusions.

-Lying down on hard surface.

- The shoe on the foot of the affected limb hitting the point of the olecranon during motion or lying down.

- Infection (brucellosis).

Types: **-** Acute bursitis& Para bursitis.

-Purulent bursitis

Signs: Prominent swelling over the point of the elbow which may be serous, fibrinous or hemorrhagic.

- Mild lameness

TREATMENT: Rest

– remove the cause

– intrabursal inj. of corticosteroids 4 times at weekly intervals.

Systemic inj. of anti-inflammatory – local liniment or counter irritants

– In brucellosis, systemic inj. of high doses of tetracycline.

Fracture of the scapula

These are met within large animals & seldom in small.

The site of fracture of the scapula may be at the acromion process, one of the superior angles of the body, the neck of the articular cavity.

Sings:

severe lameness.

Painful local swelling.

Crepitations & increased mobility of the parts.

Diagnosis: case history.

X – ray in small as, ensures the diagnosis.

Prognosis:

Favorable in fractures of the acromion process & superior angles.

Incurable in fractures of the neck, body the articular surface.

Treatment:

In the favorable forms, animals are cured without treatment. Only, a sling may be used when the animal tolerate them.

Fracture of the Humerus

It is usually occurs in large As. as spiral fracture of the shaft ; while in dogs & cats occurs in the lower third of the bone or just above the condyles (supracondylar fracture) It may occur in the condyle itself .

Etiology:

1. Traumatic direct violence.

2. Violent rotatory movement of the elbow j.

Signs:

1 – High degree of lameness.

2 – Sever local swelling with crepitation.

3 - Shortening of the affected limb with abnormal mobility.

Prognosis:

Usually unfavorable in large As.
Mostly favorable in dogs.
Facture of the condyle is mostly unfavorable due to ankylosis of the elbow

takes place after healing.

Treatment:

1.Plaster of Paris or Thomas Splint does not give the desired effect due to difficulty to immobilize & bring the fracture ends in approximate position.

2.Intramedullary fixation using pins when the fracture is in the shaft.

3.If the shaft is fractured at its distal extremity either through or just above the supracondylar foramen, immobilization can be obtained by inserting a Rush pin through the medial epicondyle.

4.In spiral fracture, although the degree of immobilization is attained, the pin tends to push the edges of the fragment apart. This is overcomes by drawing of the edges together with a band of monofilament wire encircling the shaft.

FRACTURE OF THE RADIUS & ULNA

Common in dogs than in horses & cattle.

-Fracture of the radius is complicated by fracture of the ulna. Fracture of the ulna is more often associated with an anterior dislocation of the head of the radius.

-The site of fracture of the ulna in large As. is usually the olecranon process or at the level of the radio-ulnar arch.

Etiology: In the horse:

-Kick from another animal.

1. During racing, when the horse is suddenly fall down.
2. Accidents & by direct violence.
3. During an attack of severe colic or severe muscular contractions.

In the dog :

1. A bite from another animal.
2. Springing from a high place.
3. Accidents by motor cars & vehicles.

Signs:

- In complete fracture of the radius & ulna:

Easily diagnosed as there is loss of function, abnormal mobility, local painful swelling & crepitus. Radiography ensures the diagnosis.

- In cases of olecranon fracture: a high degree of lameness.

b. Swelling at the region of the elbow.

c. Dropped elbow as in case of radial paralysis.

d. The carpus is flexed.

e. The animal bears weight on the toe or may drag the hoof.

f. Severe pain on manipulation of the olecranon.

g. Crepitation can be detected when the fragments are intact.

Treatment:

1.Fissures of the radius or ulna in foals & calves can be treated by rest in a big box & bandage or supporting the horse in slings & immobilizing the leg in a plaster cast extending from the elbow to the coronet.

2.The fracture of the radius or ulna in large As. is unfavorable. If the fracture is transverse & there is no or slight displacement & the interosseous ligament remains intact. It will be sufficient to keep the horse at rest in slings & the leg was supported by a plaster of paris bandage from the foot up to the elbow.

3.In dogs & cats, the ulna apart from the radius, may be fissured or fractured. In this case , the radius acts as a splint to keep the fragments of the ulna in position , and allowed union to occur even without dressing and both treated by immobilization in a plaster cast extending from the elbow to the foot .

4.The best treatment is the pinning & this can be performed by two routs:

a. Extra medullary bone pinning.

b.Intramedullary pinning.

5. In fractures of the olecranon process, fixation is performed using pins driven from the point of the olecranon below or using screws after a curved skin incision is made medially over the olecranon.

HYGROMA OF THE CARPUS (CAPPED KNEE)

It is a synovial swelling over the carpal joint.

Etiology: 1. Lack of bedding.

2. Repeated trauma during lying on hard ground.

3. Chronic infection (T.B. and Brucellosis).

4. In foals, due to minerals & vitamins deficiency.

Signs: The presence of evenly distributed soft or hard swelling over the anterior surface of the carpus.

Differential diagnosis:

1. Synovial sheath swelling (synovitis), extensor carpi radialis & common digital extensor (localized swelling involving the synovial sheath).

2. Synovial hernia (synovioma), the presence of irregular uneven swelling in either the radio-carpal or inter carpal articulations.

Treatment:

1. Removal of the cause.
2. In young As. Vitamin E injections.
3. Intrabursal injection of corticosteroids & bandage.
4. Surgical removal in long cases of S/C type present in front of the carpus.
5. Puncture, aspiration & injection of tr.iodine or leaving it which is harmless. This method is used only when the enlargement is purely serous.
6. A seton passed vertically through the swelling, thus providing the escape of the liquid contents. An antiseptic lotion is injected into the cavity through one opening.

Wounds of the dorsal aspects of the carpus

Most common in horses & cattle as a result of trauma, contusions, accidents or lack of bedding.

Degrees of the wounds of the carpus :

1- Skin abrasion or contusions of the 1st degree.

2- Contusions of the 2nd degree. → Hematoma.

3- Contusions of the 3rd degree.

4- Skin wounds.

5- Wounds of the tendons & tendon sheaths.

6- Penetrating wounds to the carpal joint (Broken knee).

7- Severe trauma: accompanied with fracture of one or more of the carpal bones.

Contusions of the 3rd degree.

Traumatic arthritis of the carpus

"Popped knee or Carpitis"

Inflammation of the carpal articulations.

Etiology :

Trauma (contusion , penetrating wounds)

Bad conformation of the limb (calf knee)

Infection (navel infection , brucellosis)

Put young horses early in work.

Signs :

High degree of lameness, passive flexion causes pain.

Local signs of infln. (distention of the joint capsule)

General body reaction in infective cases.

In chronic carpitis, ankyloysis may develop → exostosis can be determined by radiograph.

Prognosis :

In early stages, the prognosis is guarded to favorable.
In cases with poor conformation → unfavorable.
If there are articular changes, prognosis is unfavorable.

Treatment :

1- Rest, general systemic antibiotics in infective cases.

2- In non infective cases, Intra articular injection of corticosteroids & bandage.

3- Systemic inj. of NSAID (phenylbutazone)

4- In open knee joint lavage using balanced electrolyte sol. followed by intra-articular inj. of hyaluronic acid.

5- Passive exercise to overcome ankylosis.

6- Surgical removal of bony growths by a smooth curetting of the surfaces, a cast is applied for 8 days following surgery & then a pressure bandage for 30 days. (Arthroscopy).

Affections of the metacarpus

Anatomy: 3 bones are attached closely to each other: -
1- The 3rd metacarpal (large) bone.
2- The 2nd (medial) metacarpal or splint bone.
3- The 4th (lateral) metacarpal or splint bone.

At the dorsal aspect of these bones there are two extensors
a) The common digital extensor.
b) The lateral digital extensor.

At the posterior aspect of the large metacarpal bone the flexor tendons arranged from inward to outwards as:
a) Suspensory or interosseous ligament.
b) The deep digital flexor tendon.
c) The superficial digital flexor tendon.

Tendon disorders

(1)Tendonitis(tendosynovitis,tenosynovitis,bowed tendon)

-Tendonitis is infln. of the tendons & tendon sheaths. This is a common affection of all kinds of equines; it affects either superficial, deep flexor tendons or the suspensory lig. Sprain can be defined as injury to a ligament resulting from overstress. This causes some degree of damage of the lig. fibers or their attachment. The term strain is applied to the damage of a tendon or muscle caused by overuse or overstress.

-The action of SDFT is to flex the fetlock & pastern during motion (race horses)

-The action of DDFT is to thrust the toe to the ground (drought horses)

-The suspensory lig. works together with the superficial flexor, it takes the full body weight during the descending phase & prevents excessive flexion of the joint.

Etiology : Predisposing causes : -

1-Unfit condition, young horses forced to training or hard work.

2-Poor conformation (upright pastern, sloping pastern & very oblique hoof).

3-Debilitated diseases.

4-Quality of tendons (fine hard tendons is better than soft gummy tendon).

5-Nutritional deficiency (vit.E & minerals)

6-Improper shoeing.

Exciting causes :

1- Trauma.

2. Hard work (overexertion of the tendons)

3. Parasitic infestation (Filaria reticulata).

Sings: *1. Lameness*
2. Local signs of infln.
3. Bowed tendon 4. Increased digital pulsation 5. In chronic tendonitis hard fibrous thickening of tendons

Prognosis: is usually more or less serious because the injured tendon never regains its normal condition.

-Sprain of the SDFT & suspensory lig. are less serious than the DDFT.

Treatment:

1. Rest is very essential (3-4 weeks).
2. Cold application & bandage.
3. Application of shoe with Calkins but in case of tendonitis of suspensory lig. , a shoe with low heel is indicated.
4. Injection of anti-inflammatory esp. in acute stages.
5. In chronic cases: line firing & blistering.

(2) Rupture of the flexor tendons

Etiology :

1- Trauma by a sharp object.
2- Septic infection (septic pododermatitis)
3- As a complication of neurectomy.
4- Nutritional deficiency.

Signs :

1- Total rupture of the DDFT is most of the working As.
2- Total rupture of the SDFT occurs in race horses & riding one.
3- Total rupture of the suspensory lig (middle interosseous) occurs mostly in race & riding horses.
4- Severe degree of lameness.
5- The seat of rupture is detected on palpation esp. in s.flexor.
6- Sinking of the fetlock is noticed, bearing weight on the heal which is obvious in rupture of DDFT & suspensory lig.

Treatment:

1. Corrective shoeing.
2. Rest.
3. Tendon suture suing carbon fiber implantation which it acts as a bridge or scaffold to regeneration of the ruptured tendons. + plastering for 4 weeks.

(3) Contracted tendons (knuckling)

Contracted tendons may be congenital or acquired.

Types:

1. Arthrogenic (subsequent to ankylosis).
2. Tendogenic (subsequent to chronic tendonitis) as in cases of spastic paresis.

Signs:

1. In cases of contracted SDFT, the fetlock is flexed.
2. In cases of contracted DDFT, the heel lifts the ground.
3. The degrees of knuckling are:

a) 1st degree (The phalanges are almost vertical).

b) 2nd degree (The phalanges strike the front of the foot).

c) 3rd degree (The animal walks on the front wall of the hoof or on fetlock).

Treatment:

1. Newly born Foals, correction of the diet & plaster cast for 10 days.
2. Tenotomy of the SDFT & DDFTs.
3. Corrective shoeing.