**(Anderology) محاضرات الفرقة الرابعة**

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**Forms of Infertility in the Male**

- Effective bull fertility is equally dependent upon normal spermatogenesis, normal potency and

 freedom from venereal or semen-born pathogens.

- The occurrence of any abnormalities or affections will lead to infertility problems.

- Forms of male infertility may be divided into three categories:

1- Reduced or complete lack of sexual desire “Impotantia eregendi”.

2- Inability to copulate “Impotania coeundi”.

3- Reduced or complete lack of fertilization “Impotantia generandi” or “Postcoital infertility”.

**I- Impotantia eregendi “Reduced or complete lack of sexual desire”**

Causes:

- The condition may be either due to hereditary or environmental factors which have been fully discussed under the title “Factors affecting male sexual desire”.

Symptoms:

- Vary from complete lack of interest in mounting the female to a slight delay in copulation.

- Complete lack of sexual desire is uncommon, while moderate to slight degree of reduced sexual desire is frequently observed.

Prognosis:

- Depends upon the cause and the degree of impotency.

- In case of hereditary cause, there is none to be done.

- The environmental factors causing the lack or reduction of sexual desire can be (often) overcome or even moderated.

Diagnosis:

- Identification i.e. breed, age, etc…..

- From the breeding history e.g. previous injuries, information about his parents and relatives,

 type of ration, handling, etc…..

- General health examination, specially nutritional state (overfed, underfed), locomotor system,

 etc…..

- Special examination of external and internal genitalia.

- Measuring of the sexual desire (R.T. or libido index).

Treatment:

A- If the cause is hereditary, it is better to discard the animal from breeding (i.e. slaughtering) to prevent the spreading of such affection.

B- If the cause is environmental, it should be investigated and corrected as follows:

1- In hormonal deficiency (Hormonal therapy):

a- Administration of testosterone \* (100-500 mg in bull and stallion) several I/M injections every 3-4 days.

b- Humane chorionic Gonadotropin (HCG) which is mainly LH in nature, in doses of 5000-10000

 IU (for bull and stallion) at 4-6 days interval for 3-4 times or I/M injection of 100-200 µg GnRH

 (Receptal).

c- Treatment with iodinated casein (Thyroprotein)\*, 1gm/100 1b B.W., fed daily after mixing with bran. Also thyroxin tablets could be given per os (150-200 mg per day for 10 days).

d- Strychnine \* 100-200 mg (1-4 grains)\*\* administered orally 3-4 days before service.

2- Young untrained bulls should be trained for the purpose of the use and the old bulls should be discarded.

3- In case of overused or sexually exhausted bulls, provide sexual rest for 2-3 months.

4- In psychologically affected bulls, give sexual rest for 2 months to forget the previous accident. Also change the environmental conditions under which the accident occurred.

**N.B.**

\* The animal may become unusually aggressive.

\*\* 1 grain = 70 mg.

5- Changing the teaser or place of semen collection together with gentle and good handling of the bull before, during and after coitus.

6- Proper housing of the bull in a well ventilated and hygienic box with yard for exercise.

7- In case of underfed animals, correct the ration.

8- In overfattened animals, the ration is reduced beside daily exercise.

9- Treatment of systemic diseases and any pathological condition as internal parasites.

**II- Impotantia coeundi “Inability to copulate”**

- In this condition, the animal has a normal sexual desire but it is unable to perform successful

 mounting. In other words, it is the inability to copulate despite normal sexual desire. It is one

 of the most frequent causes of infertility in males.

- It is usually a secondary manifestation of affection, disease or injury, elsewhere in the body,

 which is associated with severe pain during coitus.

**Causes of impotentia coeundi:-**

A- Abnormalities and affections of neuromusculo-skeletal system and hooves (NMS and H).

B- Abnormalities and affections of copulatory organs.

C- Affections of the scrotum and its contents.

D- Other causes (umbilical hernia, urinary calculi, traumatic pericarditis and gastritis, abscess in

 the liver, Acute seminovesiculitis, severe peritonitis, Acute orchitis and epididymitis etc…..).

**A- Abnormalities and affections of neuro-musculo-skeletal system and hooves (NMS and H) i.e. locomotor system:**

Painful lesions in NMS&H will make the bull unable to copulate due to the induced pain of the affected region which greatly discomforts the animal at the time of service.

Examples for the painful diseases of NMS & H:

1- Inflammation or dislocation of joints specially stifle and hip joints.

2- Tendenitis affecting the hind limbs.

3- Infection or abnormalities of the claws and hooves.

4- Rupture or sprain of the gastrocnemius muscle.

5- Spasms of the muscles, specially the hind limbs and back.

6- Fractures or injuries in the bones of limbs, pelvis or lumbar vertebrae.

7- Affections of the nerves, specially spinal pathology which usually causes paresis or

 paraplasia.

Prognosis:

It depends mainly upon the age of the animal, the severity of the affection, as well as the breeding value of the animal.

Treatment:

1- Sexual rest to prevent any further complications.

2- Proper feeding.

3- Apply suitable treatment according to the cause.

**B- Abnormalities and affections of the copulatory organs:**

They include the affection of the penis, prepuce and retractor penis muscles. They represent the common causes for inability to copulate.

**1- Inability to protrude the penis “Phimosis”:**

Causes:

a- Congenital underdevelopment of the penis or its sigmoid flexure causing it to be shorter than

 normal.

b- Abnormal attachment or adhesion between the penis and prepuce or between the sigmoid

 flexure and its surrounding.

c- Insufficient relaxation of the retractor penis muscles.

d- Stenosis or narrowness of the preputial orifice which may be congenital or may result from

 tumor or hematoma.

e- Psychological impotency e.g. in young bulls or as a result of previous accident or injury during

 service or semen collection.

f- Fusion between penis and prepuce due to absence of keratinization of ectodermal lamellae due to deficiency of testosterone.

Symptoms:

It varies from complete inability to protrude the penis out of the prepuce to partial protrusion not more than 4-8 cm which is not far enough to perform complete service.

Diagnosis:

Based on pudendal anaesthesia or injection of tranquilizer to produce relaxation of the retractor muscle, then the penis is withdrawn by the hand.

Prognosis:

- It depends upon the nature and severity of the affection.

- In congenital underdevelopment of the penis, the animal is discarded from breeding.

- In severe adhesion between penis and prepuce, prognosis is unfavorable.

Treatment:

1- Treatment of adhesions between penis and prepuce by surgical interference and the use of antiseptic and antibiotic ointment or antibiotic oily suspension every other day.

**N.B.** It is important to differentiate between the normal fusion between glans penis and prepuce in young immature males and the persistence of such fusion after maturity which may be treated by I/M injection of testosterone (100-200 mg several times within 2-3 days interval). Testosterone causes keratinization and breakage of ectodermal amellae of both glans penis and prepuce.

2- Sectioning of the retractor penis muscle may be recommended if it is the cause, however, this may cause “Paraphimosis” later on.

3- Surgical widening of the preputial orifice when it is stenosed.

4- In psychological disturbed bulls, sexual rest for two months and improvement of the environmental conditions under which service or semen collection occurs.

5- Transcutting of the persistent frenulum.

**2- Inability to withdraw the penis “Paraphimosis”:**

It is the inability to retract or withdraw the protruded penis into the prepuce.

Causes:

a- Strangulation of the penis after erection by small preputial orifice due to:

- Hereditary

- As a result of reflection of the preputial hair into the preputial orifice during withdrawing of the penis.

- Trauma or abscess formation in the preputial orifice which interferes with retraction of the

 penis.

- The presence of fibropailloma on the penis.

b- Rabies results in paralysis of retractor penis muscle in the bull.

c- Previous sectioning of the retractor penis muscles.

d- In stallion, neuromuscular paralysis with general weakness may be the cause.

e- Severe inflammation of the testicles may cause pressure on the free end of the penis and

 prepuce leading to paraphimosis.

Symptoms:

1- The protruded penis may be swollen and edematous.

2- The surface of the penis may show areas of necrosis and ulceration as well as wounds which may be accompanied by inflammatory exudates or purulent discharge with dust and dirt.

3- Sometimes there is myaisis which in severe cases causes complete destruction of glans penis (frequently occur in ram and goat buck).

Prognosis:

- Depends upon the degree of necrosis and the efficiency of the treatment.

- When the glans penis becomes gangarenous or destroyed by myaisis, the prognosis is very bad.

Treatment:

1- Apply epidural anaesthesia or internal pudendal nerve block.

2- Clean the penis and remove the necrotic tissue by the use of antiseptic solution.

3- If the penis is greatly swollen, then cold application is recommended.

4- Surgical widening of the stenotic preputial orifice.

5- Surgical removal of the fibropapilloma if present.

6- Before replacement of thepenis into the prepuce, apply antibiotic ointment on the penis and the prepuce.

7- The pens and prepuce are dressed again every other day with antiseptic solution, then apply antibiotic ointment.

8- If preputial hair is long, then shorten it (2-3 cm only).

**3- Inflammation of the glanspenis “Balanitis” and prepuce “Posthitis”:**

- The affections are commonly occurring together as balano-posthitis.

- Such affections more frequently occur in ram and goat buck and the condition may be

 complicated with myaisis also.

Causes:

a- Mechanical injury e.g. trauma or injuries of the penis during natural service or semen collection, followed by bacterial infection.

b- Irritation caused by foreign material e.g. feces, dust or dirt which may enter the prepuce leading to irritation and inflammation.

c- Venereal infection e.g. T. fetus, C. fetus, vesicular and granular diseases as well as T.B.

 infection.

d- Insect bite (Snake, Scorpion, ants, etc….).

Symptoms:

1- In acute conditions, there is a marked swelling and oedema which is accompanied by severe

 pain.

2- The glans penis is congested and show peticheal hemorrhage and areas of ulceration with

 purulent exudates.

3- Usually mucopurulent or purulent discharge comes out of the prepuce.

4- In cases of T.B. infection of the penis and prepuce, it is characterized by the presence of large

 granulomatous bleeding lesions which may be accompanied by “phimosis”.

5- In case of vesicular and granular disease the surface of the glans penis shows small intact or

 ruptured vesicles, or many small reddened areas, pin-headed in size. These lesions may be

 accompanied by small areas of necrosis and ulceration.

6- In chronic untreated cases, hard adhesions occur between the glans penis and the prepuce,

 and the bull couldn’t protrude his penis out of the prepuce (i.e. Phimosis).

7- In complicated cases which are accompanied by myaisis, variable parts of glans penis and

 prepuce are destroyed and lost.

Prognosis:

- Depends upon the severity and nature of the affection.

- If adhesions occur, prognosis is bad and it is better to discard the animal from breeding.

Treatment:

- Applied under epidural anaesthesia or internal pudendal clock in acute or sub-acute cases.

1- Complete sexual rest and hygienic housing of the bull apart from cows.

2- Douching of the penis and prepuce with mild warm aquous antiseptic solutions e.g. Acriflavin or Entozoon 1: 1000, Chloramine 0.5%, Potassium Permanganate 1: 1000, Savlone or diluted Betadine and removal of necrotic tissue

3- Application of antibiotic or sulphonamide ointment or in oily preparation.

4- Application of cortisone preparation in association with antibiotic and vitamin A are of great value.

5- Treatment is repeated every day till curing.

6- In case of insect bite, apply H2O2 locally and an antihistaminic systemically e.g. Avil….I/M.

**4- Ruptured, Fractured or Broken Penis:**

Causes:

a- It is common in young untrained bulls with strong sexual desire, where rupture of the penis occurs at coitus as a result of sudden bending of the erected penis against the stanchion or the hind quarters of the teaser animal at the time of ejaculatory thrust.

b- It may arise from accidental misplacement of A.V. during semen collection.

c- In the stallion it may occur as a result of strong kicking of the erected penis by the mare

 during service.

**N.B.** At the time of breeding, the blood pressure in the penis is greater than 200 pounds/square inch in stallion.

Symptoms:

- The appearance of sudden swelling (hematoma) at the ruptured site of the penis just cranial

 to the scrotum. The size of the hematoma depends on the amount of hemorrhage.

- At first the hematoma is soft and fluctuating and later on, it becomes firm and hard due to

 clotting of the blood.

- The step or stride of the animal becomes short and it is associated with slight arching of the

 back.

- The development of hematoma and oedema at the site of rupture may lead to prolapse of the

 prepuce as a result of induced pressure.

Diagnosis:

It is done under epidural anaesthesia or pudendal nerve block. The condition must be differentiated from abscess, trauma or rupture of the urethra.

Prognosis:

- It depends upon the suitable time treatment.

- It is bad in infected hematoma or when severe adhesion between penis, prepuce and

 abdominal wall occurs.

Treatment:

1- Place the animal on systemic broad-spectrum antibiotic therapy at once.

2- Wait five days after the accident till the hematoma becomes clotted and before organization.

3- Apply general anaesthesia, shaving and disinfecting the areas of operation.

4- A suitable incision is made through the skin (about 15-20 cm long) over the hematoma and parallel to the penis.

5- Careful removal of the clotted blood in the hematoma.

6- Free the pens out from any surrounding blood and adhesions, and suture the penis carefully

 with fine catgut (No. 1 or 2), then apply antibiotic ointment or antibiotic oily suspension and

 continue to give systemic antibiotic for one week post operation.

7- Suture the prepuce with chromic catgut No. 2, and suture the skin with silk or nilon, and then

 apply antibiotic ointment.

8- Complete removal from sexual excitement for 30 days, afterwards, the penis is extended

 manually and its sensitivity is checked.

9- Remove the skin silk suture after 10 days.

10- Return the bull to serve 60 days after surgery.

**5- Abnormalities in the shape of the penis:**

a) Deviated or curved penis:

Causes: Congenital or hereditary

Symptoms:

1- It usually occurs in the free portion of the penis.

2- The free end of the penis may be curved downwards, upwards or laterally.

**N.B.** Such abnormalities in shape of penis prevent natural service because the glans penis could not locate the vulva.

Diagnosis:

- Examination of the penis could be done during mounting or the act of trying to mount a

 female or a teaser.

Treatment:

1- Because the condition is congenital, it is better to discard the animal from breeding.

2- By surgical interference, make a double V shape or an elliptical incision at the convex side of the penis, then suture using fine catgut (No. 2) and apply antibiotic ointment.

3- Slight sexual stimulation every other day with application of oily antibiotic suspension to prevent adhesion.

b) Corkscrew penis

**6- Tumors of the penis:**

- The type of tumor is commonly fibropapilloma which is benign in nature.

- The cause may be virus.

- The tumors of the penis may prevent copulation due to their large size and the associated pain during service.

Treatment:

1- Epidural anaesthesia.

2- They could be removed surgically by a scissor or by grasping and pulling them off.

3- Then suturing the m.m. of penis by fine catgut and application of antibiotic ointment.

4- Prognosis is usually good by the proper treatment.

**7- Persistent frenulum:**

- The cause is congenital.

- In this condition, there is a persistent band of fibrous tissue which connects the main raphe of

 the glans penis to the prepuce.

- This band causes the penis to be directed backwards in a semi circular manner during erection

 and this interferes with both natural service or semen collection by A.V.

Treatment:

- Surgical cutting of the persistent frenulum after epidural anaesthesia and application of

 antibiotic ointment.

**8- Abscess in the region of the sigmoid flexure:**

- The presence of chronic abscess at the region of sigmoid flexure may cause severe adhesions

 which may be severe enough to prevent extension and protrusion of the penis during erection

 (i.e. Phimosis).

Prognosis:

Bad in case of severe adhesions.

Treatment:

1- Epidural anaesthesia and infiltration anaesthesia.

2- Open and clean the abscess carefully and remove the adhesions.

3- Wash with light antiseptic solution and apply antibiotic ointment locally.

**9- Eczema of the skin surrounding the preputial orifice:**

Such affection causes severe pain and irritation which may interfere with service.

Treatment:

1- Scraping the skin hard.

2- Application of gentian violet 2% aquous solution or Zinc Sulphate ointment or cortisol ointment.

**10- Preputial Prolapse**

**C- Affections of the scrotum and its contents:**

These include dermatitis, hernia and inflammation of the testes and epididymis, which will be discussed later on with impotantia generandi.

**1- Dermatitis of the scrotum:**

It is associated with severe pain and irritation which may lead to impotantia coeundi.

Causes:

Either fungi or parasites.

Symptoms:

- It is characterized by hyperaemia, moistening and the formation of serous, mucopurulent or purulent exudate. The exudates may be dried forming scapes on the skin.

- The lesion may be in the form of scattered patches or may involve the entire skin of the scrotum.

- In chronic conditions, the skin becomes keratinized showing irregular areas of thick skin. This

 may cause atrophy of the sweat and sebaceous glands which may greatly disturb the

 thermoregulatory mechanism of the scrotum.

Treatment:

1- Scraping the skin of the affected part and application of a fungicidal ointment. Also Zinc

 Sulphate ointment or getian violet 2% aq. Solution may be used.

2- In case of parasitic infestation, we use suitable spraying powder e.g. gamatox or gamaxan

 and specific treatment for mange, 1% ivermectin (Ivomec injection, 1 ml S/C per 50 Kg B.W.

 for cattle).

**2- Scrotal hernia:**

In such affection, severe pain arise from the pressure on the herniated part of the intestine during mounting which leads to dismounting (i.e. Inability to copulate).

Treatment:

Surgical operation to withdraw the herniated part back into the abdomen and reduce the size of the inguinal canal by suturing.

**D- Other causes of impotantia coeundi:**

- Umbilical hernia and urinary calculi.

- Traumatic pericarditis and gastritis.

- Abscess in the liver, kidney or lungs.

- Acute semino-vesiculitis and severe peritonitis.

- Acute orchitis and epididymitis.

- Osteomalacia.