Specific diseases of Asian elephants

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The earliest writing describing the diseases of elephants in ancient literature said to be the works on "Gajasastra" (Elephantology) written in Sanskrit by authors like Gautama, Narada, Mriga-charma, Rajaputra and Vyasa. "Hasthyayurveda" a legendary book in Sanskrit written by a sage Palakapya deals with some diseases, treatment, desirable and undesirable points of selection, management practices and some mythological aspects on the origin of elephants. The earliest book in English dealing with diseases of elephants seems to be that of W. Gilchrist "A practical treatise on the treatment of diseases of elephants" published in 1848. Later Slym (1873), Sanderson (1878), Steel (1885), Evans (1910), Herpburn (1913), Milroy (1922), Ptaff (1940), Ferrier (1947), Utoke Gale (1974), Chandrasekharan (1979) and Panicker (1985) have documented their findings on the incidence, etiology and control of diseases of Asian elephants.

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Generally the elephants are said to be bad patients based on some observations like:

1. They are naturally very timid suspicious animals, and often dangerous for strangers to handle.

2. Their vital processes are slow hence diseases run a protracted course, take a low form and loss of condition is only slowly regained.

3. Their natural timidity in health is often augmented by diseases, they very rapidly lose heart, becoming indifferent or oblivious to their surroundings in serious ailments.

4. Their sensitive nature leads to much difficulties in administering medicines.

Signs of Health

A healthy elephant is never still, but is continously swinging its trunk and tail, flapping its ears, swaying the body or the head from side to side and rubbing one leg against the opposite one or swinging it. The eyes are clear and bright and there is little or no watering. The palate, tongue and internal lining of the trunk, are of a healthy pink colour. The skin is soft and wrinkled, almost black in colour and has no appearance of glaze along the side of the spine or the hip. The bristles covering the body are firm to touch. The light coloured spots and blotches on the head and trunk are pinkish in colour. A moist secretion exudes around the nails and is observed by throwing some dust on the parts. The appetite is good and the general impression is one of contentment. The urine is copious in quantity of a faint yellow tinge and the odour not unpleasant. The dung is brownish in colour, darkening on exposure to the air, the colour may vary considerably according to the fodder eaten. It is passed in large lumps of 4 to 6 boluses and five to six times in day. A healthy elephant will only lie down once or almost twice during the night and never during the day.

Signs of Indisposition

The animal looks listless; there is general languor and absence of incessant motion so characteristic in health. The skin appears greyish in colour, hangs loosely and is dry and some times scaly, the spots and blotches also assume pale colour. The trunk presents a shrivelled appearance. The colour of the membranes of mouth and that of tongue changes to a muddy colour or deep red with or without blotches on the palate. The lower flap of the ear is very often cold to touch; the eyes are dull, appear retracted and there are frequently abnormal flow of water from the eyes. The animal may be out of condition and feverish, appetite small or even wanting, proper rest is not taken and he may lie down and get up several times. The urine may be less in quantity and high coloured. The dung looks hard and will be coated with mucus or diarrhoea may be present.

The most important infectious diseases reported to

occur in Asian elephants are parasitic diseases like gastrointestinal helminthiasis, cutaneous filariasis, trypanosomiasis, ectoparasitic infestation, bacterial diseases like tuberculosis, tetanus, salmonellosis, haemorrhagic septicaemia and anthrax, viral diseases like pox and foot and mouth disease. The abdominal disorder, impaction of colon, is very common in captive elephants.

Parasitic diseases

Incidence of parasitic diseases is very high in both captive and wild elephants. The following parasites were recorded from elephants.

Round Worms

Murshidia indica, M. murshidia, M. falcifera, M. nevulemairei, Quilonea travancra, Q. rennie, Q. guptai, Q. singhai, Q. sedicinradiata, Amira pileata, Decrusia additictia, Choniangium epistomum. C. megastomum, Equinurbia sipunculiformis, Bathmostomum sangeri, Bunostomum foliatum, Grammocephalus varedatus, G. hybridatus, Parabronema indicum, P. smithi, Toxocara loncoptera, Leiperinia galebi, Syngamus indicus, Strongyloides elephantis, Indofilaria elephantis, I. Pattabhiramani, Stephanofilaria assamensi, S. srivastavai.

Amphistomes

Pseudodiscus collinsi, P.hawkesi,Gastrodiscus secundus, Pfenderius papillatus, P. heterocaeca, P. birmanicus.

Blood Fluke-*Bivitellobilharzia nairi*

Liver Fluke-*Fasciola jacksoni*

Tape Worm-*Anoplocephala manubriata*

Protozoa-*Trypanosoma evansi*

Louse - *Haematomyzus elephantis*

Ticks - *Boophilus annulatus, Haemophysalis spinigera, Rhipicaphalis haemophysaloides, Ornithodorus savigni.*

Fly Maggot - *Cobboldia elephantis*

Gastro intestinal helminthiasis

The incidence of gastro-intestinal helminthiasis is very high in captive elephants. This condition is caused by 26 species of round worms, 6 species of amphistomes, one species of tape worm and one species of blood fluke. In general the infected elephants exhibit frequent colic accompanied by foul smelling diarrhoea, tendency to eat mud and oedematous swelling on the lower abdomen, jowl and neck region. Morbidity is more as compared to mortality. The disease can be diagnosed by microscopical examination of dung samples and finding out the characteristic eggs of the respective helminth.

A large number of antihelmintics are found to be effective and safe against gastrointestinal helminthiasis. A list of antihelmintics with effective dosage is furnished below:

Name of the drug	Dose rate	Route of administration
Strongylosis		
Tetramisole hydrochloride	3 - 5 mg/kg BW	Orally
Parbendazole	6 - 10 mg/kg BW	Orally
Morantl citrate	2 - 3 mg/kg BW	Orally
Morantel tartrate	2 - 4 mg/kg BW	Orally
Thiabendazole	20 mg/kg BW	Orally
Thiophanate	14 mg/kg BW	Orally
Oxibendazole	2.5 mg/kg BW	Orally
Mebendazole	2.5 - 4 mg/kg BW	Orally
Levanisole	2.5 - 3 mg/kg BW	Orally
Albendazole	2.5 mg/kg BW	Orally
Fenbendazole	2.5 mg/kg BW	Orally
Amphistomiasis		
Hexachlorophene	10 mg/kg BW	Orally
Oxyclosanide	5 - 7 mg/kg BW	Orally
Cestodiasis		
Praziquental	2.5 - 4 mg/kg BW	Orally
Oxyclozanide	3.4 mg/kg BW	Orally
Niclosanide	70 mg/kg BW	Orally
Hexachlorophene	10 mg/kg BW	Orally
Blood fluke		
Anthiomaline	50 ml/2000 kg BW	S/C at weekly interval for 8 doses

Cutaneous filariasis

The cutaneous filariasis caused by *Indefilaria pattabhiramani* and *Indofilaria elephantis* is mostly seen in elephants engaged in timber works in forest area. It is characterised by the formation of nodules of 1 to 2 cm size on the sides, lower abdomen and outer sides of hind limbs. The nodules rupture in one or two days after their appearance, oozing blood at about 10 seconds interval for about 30 minutes and stop bleeding spontaneously. Later, these nodules become fibrosed and new ones emerge at other sites. The discharge from the nodules reveal the presence of microfilaria of the worm. Anthiemalin 50ml / 2000 kg BW S/C on the tail fold or neck at weekly interval for 8 weeks was found to be effective.

Trypanosomiasis

The Surra or Trypanosomiasis in elephant is caused by a blood protozoan, *Trypanosoma evansi.* It is common in rainy season and the parasite is transmitted by biting flies. The common symptoms are intermittent rise of temperature, dullness, sluggish movements, lacrimation, dry and harsh skin, constipation alternating with diarrhoea, oedematous swelling on the trunk, neck and lower abdomen. Two or three i/m injections of Berenil at 5 to 8 mg / kg body weight or S/C injection of Antricide methyl

sulphate at 3 to 5 mg / kg body weight are found to be useful.

Louse infestation

The louse *Haematomyzus elephantis* is very commonly seen on the skin. The infected animals show restlessness and pruritis. The diseases can be controlled with external application of organophosphorus or synthetic pyrethroide in appropriate concentration.

BACTERIAL DISEASES

Tuberculosis

It is believed that the elephants are more susceptible to human type of *Micobacterium tuberculosis*. The elephants suffering from tuberculosis show the symptoms like anorexia, progressive weakness, foul smelling thick yellowish discharge from the trunk, lethargy and rapid exhaustion. Streptomycin at 100 gm on alternate days I/M for a period of four weeks is found to be useful in young elephants. Recently oral administration of 30 capsules each containing Rifamycin 450 mg and isoniazid 300 mg daily twice for a period of 6 to 12 months is also found to be effective in controlling the symptoms of chronic cases.

Tetanus

This condition is caused by *Clostridium tetani* and is characterised by partial or complete locked jaw, inability to drink water, stiffness of limbs, paroxysms and jerky movements of muscles and high mortality rate. Though the disease in elephants is believed to be incurable, a solitary case could be treated successfully by administering the drugs viz., Diazepam 250 mg I/V, Antitetanus serum 2.5 lakhs units I/V, Crystalline penicillin 450 lakh units I/V and combination of electrolyte and 10% dextrose 25 litres. The drugs were repeated for two days more.

Haemorrhagic septicaemia

It has been reported, Haemorrhagic septicaemia was much more common in elephants than it was imagined and said that many cases probably were mistakenly diagnosed as anthrax or snake poisoning. The elephants may get infection directly from diseased cattle or buffaloes through close contact or by inhalation of droplets or by ingestion of virulent organisms deposited on herbage or water. Another possibility of infection is inoculation by biting insects. The disease may be so acute in certain cases that there is no sufficient time for noteworthy symptoms to develop or be seen. The duration of the illness may be from 3 to 36 hours. The symptoms recorded are complete loss of appetite, frequent yawning, proboscis contracted, trembling, high fever, swellings of variable sizes, diffuse or circumscribed in different parts of the body. Hot and painful swellings appear in the region of the throat, which may later spread over, to the face. Sometimes swellings may be noticed under the abdomen, shoulder, base of tail and groin and these may later become hard and tense. In case, where the throat is affected, the respirations are increased in number, laboured and difficult and as a rule noisy. The respiratory difficulties are very acute towards the end and death may take place in convulsions from suffocation. The tongue may be dark in colour and swollen. The lining membrane of mouth may be dry or coated with sticky saliva. The palate may be dark and with mulberry coloured spots. There will be discharge of slimy materials from the trunk. In some cases vomiting may occur. In prolonged cases the animal may show colicky pain and diarrhoea with mucous and traces of blood. Urine may be scanty, high coloured and turbid. Staggering gait and weakness on hindquarters may also be observed in some cases. Diagnosis is made by microscopical examination of the blood and the smears made from the discharge of the lesions.

Treatment

Sulphamethazine 200 to 250 gm orally may be useful followed by half this dose daily for three days.

Sulphamethazine sodium 33 l / 3% 800 ml S/C or I/V followed by half the dose is also effective.

Anthrax

This is a very serious disease and prompt measures ought to be taken at once or the mortality will be exceedingly great. It is caused by *Bacillus anthracis* and occurs in enzootic and epizootic forms in tropical and sporadic form in temperate countries. The suspicion of the prevalence of this disease should arise when one or two animals of a herd suddenly die and that too sometimes in as short a time as a couple of hours or so. The disease may manifest in apolectic, lung, and intestinal or skin forms. The general symptoms are shivering, pyrexia, swelling behind the jaws, between the limbs, groins, on the front of shoulder, belly or hindquarters. The swellings are at first hot, painful and doughy but later becomes cold and painless. The swollen trunk, staring eyes, difficulty in breathing and weakening of hindquarters any also be noticed. In the gastrointestinal form, there will be colicky pain, diarrhoea with blood in the dung and bleeding from the mouth. Animal becomes extremely weak with in a few hours and dies in 2 to 24 hours. After death rapid decomposition sets in.

Treatment and control

Terramycin and penicillin can be tried if the disease is diagnosed at the initial stages. Penicillin is recommended at the dose rate of 4000 units per pound body weight, repeated in three days. As a preventive measure all animals should be vaccinated with Anthrax spore vaccine S/C at the root of the tail in the caudal fold. Recommended doses are:

Elephant of age 20 years and above	3 ml.
Elephant of age between 15 and 20	2 ½ ml
Elephant of age between 10 and 15	2 ml
Elephant of age between 5 and 10	1 ½ml
Elephant of age between 2 and 5	1 ml

Very weak, debilitated, aged animals and those advanced in pregnancy are not being inoculated.

Salmonellosis

Salmonellosis is attributed as one of the major causes of mortality in elephant calves. *Salmonella javiana, S. butantam, S.weltervreden, S. typhimurium, S. dublin* etc. are reported to be the causative organisms. Sudden onset of diarrhoea with mucus and blood, off feed, colic and extreme weakness were noticed in four young calves. Hundred percent mortality was observed in all the four cases within one or two days even thought treatment was given with Chloromycetin succinate, Metranidazole and large quantity of electrolytes and glucose. Post mortem showed typical lesion of haemorrhagic enteritis.

VIRAL DISEASES

Elephant Pox

Incidence of pox in elephants is comparatively rare. The important symptoms are oedema of head, trunk and lower abdomen, eruption of pustules on the buccal mucosa, tongue, ventral aspect of trunk, earflap and abdomen. Severe conjunctivitis is a feature and it should be treated without delay with antibiotics like Ampicillin or Gentamycin and eye drops otherwise vision will be affected due to opacity.

Foot and Mouth disease

Foot and mouth disease was noticed in captive elephants. The symptoms exhibited are ulcers in the mouth and around the foot pads, high rise of temperature and separation of footpad. Administration of antibiotics like chloromycetin, foot bath with 1% formalin and external application of Castalanis solution are found to be very effective.

Impaction of Colon

The incidence of impaction of colon is very common in all types of elephants especially during the festival periods. It is mainly due to defective management. The tendency of mahouts to feed and water elephants, almost immediately after a long strenuous work or march especially in hot and humid summer season when the animal is very hungry and thirsty, has been the most important cause. Feeding with very fibrous and dry fodder, lesser intake of water and diseases of teeth are the other predisposing causes. Initially the animal shows colic with frequent lying down and getting up tendency and later stoppage of eating and drinking leading to constipation. Some time this condition will last for many days and one solitary case lasted 75 days. In complicated cases due to intestinal oedema large quantity of fluids will be flowing out from the rectum leading to severe dehydration. Some time tympany may develop in prolonged condition and the animal dies due to rupture of colon and consequent peritonitis.

The following line of treatment is found to be useful in most of the cases.

◆ Analgesic and antispasmodic (Novalgin or Baralgan 60 - 90 ml I/M)

◆Antihistamine (Avil 70 - 100 ml I/M)

◆Drugs acting on the smooth muscles (Calcium pantothenate 70 - 100 ml, perinorm 50 - 60 ml, Calcium borogluconate 450 - 900 ml I/V)

◆Parasymphathetic stimulants (Carbachal 5 - 10 mg or Prestignin 3 - 4 mg I/M)

◆Antibiotics (Chloromycetin succinate 10 - 20 gm or Metranidazole 500 - 1000 ml I/V) in fluid passing condition

◆Antidehydrants (Electrolytes, Dextrose saline, 10% Dextrose combination 15 - 25 litres I/V)

Usually this line of treatment is repeated on alternate days until a cure or death. When the impacted bolus is touched with in the rectum it is removed manually. In early stage liquid paraffin one to two litres can be tried for easy evacuation of dung.

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