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ABNORMAL FINDINGS FROM ABDOMINAL CAVITY OF BIG FELIDAE IN WARSAW ZOO

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So far little information has been obtainable from literature accessible to us concerning diseases of the abdominal cavity in big felids.

Aggressiveness even of domestic cats has made us encounter much technical difficulty, when we tried to subdue the animals for testing. While such resistance may be overcome by force or drugs, such approach may often mask large series of symptoms which otherwise might be helpful in diagnostic elucidation. These problems may be aggravated seriously, when it comes to testing big felids.

During the past ten years, a few cases of abdominal diseases have been recorded from tigers and lions in the Zoological Gardens of Warsaw. Both the differentiated nature of the symptoms observed in affected animals and the great variety of pathological processes which these symptoms concealed seem to justify a brief description of the cases.

Case No. 1 was a male adult Bengal tiger named "Roter". Health began to decline visibly in the first days of August, 1962, death occurred on September 4th, 1962.

Only few symptoms were observed, including very poor appetite, occasional vomiting, and progressive loss of weight and, finally, cachexia. The post-mortem revealed gastrostenosis over a length of 20 cm from the cardia. (The mucous membrane of the stomach measured 45 cm). (Figs. 1 and 2). The stomach of the animal was only 5 cm in diameter at the site of the stenosis. Atypical changes were recorded from the gastro-intestinal mucosa. Cachexia due to defective digestion of feed was established as the cause of death.

The second case was a male Bengal tiger, named "Samuraj", four years of age. Sickness developed as of July 23rd, 1970, with repeated symptoms in the digestive tract. Vomiting was noted, too. Death occurred, after recurrence of illness, on December 23rd, 1970.

The post-mortem findings suggested chronic kidney infection with hyaline casts present in kidney cells as well as chronic glomerulonephritis, its manifestation being that of what is called cirrhotic glomeruli with serous exudate in the subcapsular space. This pathological pattern was accompanied by chronic catarrhal enteritis, haemorrhagic pulmonary infarction, atrophy of hepatic parenchyma and spleen, displacement of one third of the stomach to the thoracic cavity with necrosis of mucosa and infiltration of granular cells on the site of stenosis, as well as incarceration in the diaphragm (Fig. 3).

Uraemia due to damage of kidney parenchyma was considered the cause of death. Changes recorded from the gastric wall seemed to suggest that displacement of the incarcerated stomach to the thoracic cavity must have taken place some time ago.

Case No. 3 was a male lion, three years of age, named "Demon". The disease was manifest only from morning to night of April 14th, 1972.

The condition of the animal during examination was quite critical, temperature being 35 deg.C, respiration rate 32/min (respiratory minute volume), weak pulse, collapsed veins, and pale mucous membranes. Defensive reactions could be evoked only by touching the snout of the animal. Blood testing revealed presence of acute infection (leucocytosis with pronounced development of young cells, weak reaction of the lympho-reticular system,

toxic granules in granulocytes).

The abdominal cavity was punctured, and obtained was bloody, fetid fluid containing numerous multinucleated granulocytes, singular lymphocytes, 40 to 50 erythrocytes in the field of view (protein concentration: 4, positive response to Rivonsky-Sochanski test). The general condition of the animal aggravated progressively in spite of intensive therapeutic effort, and death occurred within two hours after administration of drugs.

The post-mortem exhibited peritonitis, with the abdominal cavity containing approximately ten litres of bloody, fetid fluid. An opening, 3 cm x 2.5 cm in size and with a piece of bone embedded in it, was detected in the wall of the small intestine (Fig. 4). Its distance from the orifice between the small and large intestines was only 30 cm, and its edges were infected. Intestinal adhesion had started in the area adjacent to the perforation (Fig. 5). These changes developed concomitantly with catarrh of the gastric mucous membrane, with one third of its surface and the entire length of the intestine being affected.

The fourth case was a male lion, three years of age, named "Caf". Nematodes of the *Toxocara* genus were recorded in quantity from the faeces of the animal, on March 9th, 1971. The animal was given Antyvermine (piperazine adipinian), a nematocide, in doses admixed to the feed rations.

Abdominal and scrotal enlargement were noted after six days had elapsed, that is on March 15th, 1971. At that time, no ova were found any longer in the animal's faeces. The lion received, admixed to his rations, three gramme of chloromycetine per die through six consecutive days. The lion's movements were normal and appetite good throughout the course of the disease.

Sudden death then occurred on March 30th, 1971. Presence of peritonitis was established from the post-mortem. Some ten litres of brownish, bloody, and extremely fetid pus was contained in the abdominal cavity. Pathohistological findings were septic changes in the liver, renal hyperaemia, fibrous infection of the testicular tunica, and organisation of the fibrous masses. Liver and kidney were tested bacteriologically and exhibited increase of *Pasteurella multocida*.

The fifth case was a male lion, aged 18 months and named "Gong". Sickness broke out May 29th, 1972, and ended June 22nd, 1972. The following findings were made from an outbreak examination: enlargement of the abdominal cavity, dementia, temperature of 41 dg.C., respiratory minute volume of 52, pulse rate of 84/min, but no changes in mucous membranes.

The abdominal cavity was punctured, and serous turbid fluid was obtained which contained numerous small fibrous flocculi. Under laboratory examination, the fluid thus obtained contained also a large number of leucocytes. The puncturing procedure was performed twice, using a trocar with 5 mm diameter. About ten litres of fluid were removed this way. Each puncturing was followed by rinsing with physiological solution, and a 500-ml mixture of electrolytes plus 20 g Mepatar, supplied from "Polfa", were administered to fill the place which had been originally filled with purulent fluid.

Four days were allowed to elapse between the two puncturings. The lion received by intravenous injection 250 ml five-per-cent glucose and 500 mg vitamin C.

The general condition of the animal improved the other day, with movements and appetite being restored. Antibiotics were admixed to feed rations until health was completely restored after one week. The procedure as a whole was performed after intramuscular injection of 3 ml ten-per-cent Rompun (Bayer) which caused about two hours of light sleep.

The sixth case was a female lion, aged 18 years and named "Berta". General health declined progressively from March 20th, 1972 to April 11th, 1972.

Poor condition had been noted many months before, and decrease in strength was observed, finally, towards the end of sickness. These symptoms were accompanied by abdominal enlargement and, in the last month, poor appetite. Ascites was established by clinical diagnosis.

Taking into consideration the advanced age of the animal, her poor condition with further continued deterioration, and feebleness even after therapeutic application of restoratives, a decision was made to put the sick lioness to sleep, on April 11th, 1972.

Post-mortem findings were presence of yellow fluid in the abdominal cavity, numerous malignant neoplastic tumours, altogether 12 kg in weight (Fig. 6), pulmonary emphysema and silicosis, and degeneration of the myocardium. Histologically, rhabdomyo-sarcoma was established.

Discussion

The two courses in tigers were based on anatomic defects, gastrostenosis and diaphragmatic hernia, which hindered digestion. The stomach of the adult male "Roter" was narrowed 20 cm from the cardia. The stenosis was 5 cm in diameter.

The second tiger, "Samraj", four years of age, suffered from incarcerated diaphragmatic hernia and had one third of his stomach displaced to the thoracic cavity, in front of the diaphragm. The stomach was strongly narrowed (to an opening diameter of 6 cm) over the length of displacement through the diaphragm.

In both cases poor appetite, vomiting, and decline in general condition were found to be the major symptoms and based on anatomico-pathological changes. While these symptoms are not typical of the above syndromes, they can be indicators of a wide range of changes in internal organs.

The two cases, no doubt, had one point of interest in common: gastrostenosis was present in either case, yet, with somewhat differentiated manifestation.

Three of the four reported lion cases were peritonitis and one neoplasm accompanied by enlargement of the abdominal cavity.

Durations of sickness were between three days and several weeks. Due to the chronic nature of all courses the only symptoms observed were enlargement of abdominal cavity, transitory lack of appetite, and aggravating apathy.

General deterioration of condition during the last weeks of the disease was an additional observation recorded from the lioness with abdominal neoplasm.

The above cases were of special interest for large coincidence of symptoms which, however, indicated, at the same time, a wide variety of pathological processes.

Summary:

Described in this paper are six cases of some special interest and relating to diseases of the abdominal cavity in big felids. The courses reported were observed in the Zoological Gardens of Warsaw during the last ten years. The cases required some brief description because of both the difference between observed symptoms and the wide range of diseases obviously underlying. Two pathological courses in tigers had been triggered by anatomic defects in the stomach which resulted in problems of digestion. Three of four lion cases were peritonitis and one neoplasm, all concomitant with enlargement of the abdominal cavity.

Zusammenfassung:

Es wird über sechs interessante Erkrankungsfälle im Bereich der Bauchhöhle bei Großkatzen berichtet. Im einzelnen handelt es sich um eine Stenose des Magens bei einem Tiger, eine

Zwerchfellhernie bei der gleichen Tierart, Peritonitiden unterschiedlicher Genese bei drei Löwen und eine Geschwulstbildung bei einem Löwen.

Résumé:

Rapport concernant 6 cas de maladies intéressant la cavité abdominale chez des félins. Il s'agit d'une sténose de l'estomac chez un tigre, une hernie diaphragmatique dans la même espèce, des péritonites d'étiologies diverses chez 3 lions et une formation tumorale chez un lion.

Резюме:

Сообщается о 6 случаях заболеваний в области брюшной полости у крупных кошачьих. В первом случае выявлен стеноз желудка у тигра, во втором - грыжа диафрагмы у того же вида животных, у трех львов обнаружены перитониты различного генеза и у одного льва найдено опухолевое образование.

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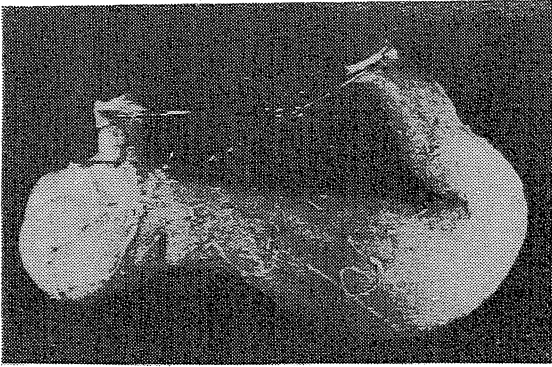


Fig. 1: Anatomic changes in the stomach of Bengal tiger "Roter"

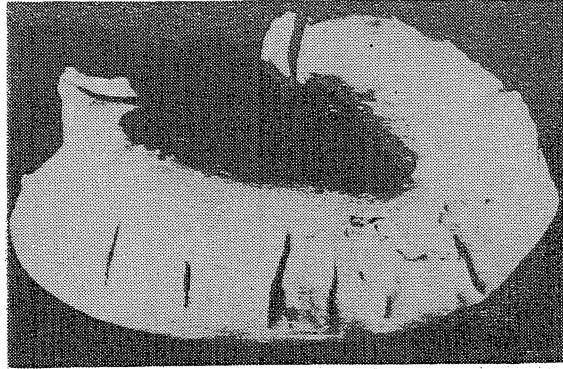


Fig. 2: Normal stomach of Bengal tiger

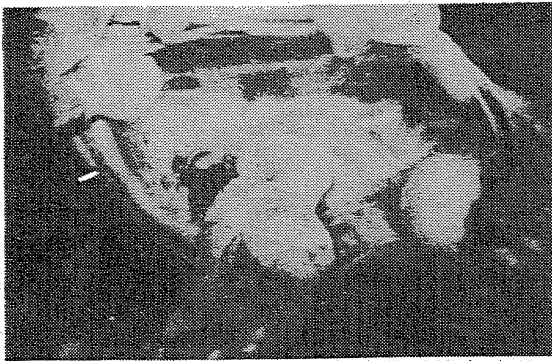


Fig. 3: Diaphragmatic hernia and narrowing of stomach in the Bengal tiger "Samuraj"

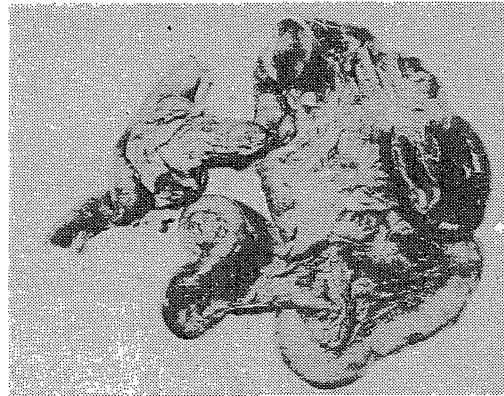


Fig. 4: Bone fragments from perforated opening of lion "Demon"

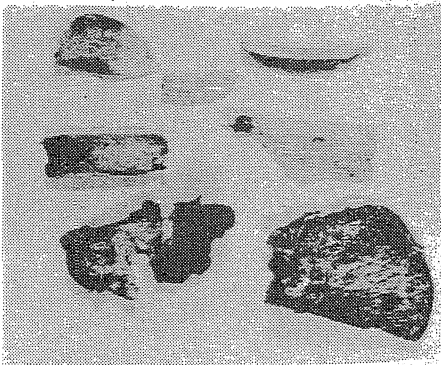


Fig. 5: Infectious changes in intestinal loop of lion "Demon" with perforated opening visible

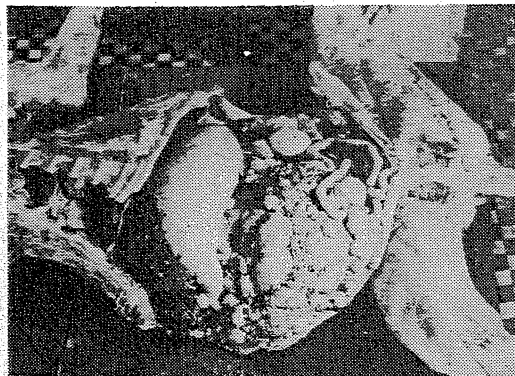


Fig. 6: Neoplasm from abdominal cavity of lioness "Berta"