PHLEGMON OF THE FOOT AS A CAMEL BITE COMPLICATION

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The great popularity of foreign excursions and travel in exotic directions, as well as increasing popularity of breeding exotic animals at home, is evidence that in daily practice one may observe injuries inflicted by animals atypically occurring in Poland. The study presented and described a rare case of a patient attacked by a camel living in an agro-tourism farm in our country. Thanks to the combination of surgical and conservative treatment complete wound healing was observed, including the skin grafts, with preserved motor function of the foot.

Key words: camel, bite wound, injury, skin graft

Reviewing Polish and foreign literature data one can find a small number of articles concerning injuries of different parts of the body inflicted by animals. In most cases these injuries result from the careless behavior or play with domestic animals, such as dogs and cats. The great popularity of foreign excursions and travel in exotic directions, as well as increasing popularity of breeding exotic animals at home, is evidence that in daily practice one may observe injuries inflicted by animals atypically occurring in Poland. Injuries caused by camels relate mainly to the countries where these animals live in the wild or are used by man to work on the farm or in tourism. This does not mean, however, that in Poland such events cannot take place.

CASE REPORT

A 57-year old female patient was admitted to the Department of General Surgery, due to injuries (general bruising of the body, mostly of the chest and head, short loss of consciousness, and extensive bite wounds of the left foot) suffered the previous day in an Agro-tourism Farm, where she was bitten by a camel. The wound was supplied the previous day in a surgical out-patient clinic at another hospital, being closed with interrupted sutures, and tetanus toxoid was administered. On admission, the patient was in good general condition, complaining of left chest and foot pain. The physical examination was as follows: HR-70/min, blood pressure 120/60 mm Hg, and temperature of 37.2°C. Additionally, a symmetrical chest, attenuated left vesicular murmur, and pain on palpation in the mid-axillary, posterior axillary, and scapular lines. The left foot was swollen and painful on palpation. The medial surface of the foot was location to three wounds, 5, 4 and 2 cm in length, while the lateral surface too one wound, 2.5 cm in length, supplied by interrupted sutures. The skin of the foot was stretched and inflamed around the wound. Pain intensified when walking. The heel was location too ecchymosis, 4cm in diameter.

Laboratory parameters showed insignificant leucocytosis (12,7 thousand/μl, N: 4-10 thousand/μl) and thrombocytopenia (110 thousand/μl, N: 150-400 thousand/μl), as well as significant CRP elevation (209 mg/l, N: 0-5 mg/l). During the following days markers of inflammation continuously increased. Chest
and left foot X-rays showed left rib (II-III) and the base of the third left metatarsal bone fractures.

On admission, the interrupted sutures previously placed were removed. Liquefactive tissue necrosis was observed in the fundus of the wound, bacteriological material was collected. The swollen foot was incised, necrotic tissues were removed, rinsed with physiological saline, and rubber setons were placed (fig. 1, 2).

A sterile wound dressing was placed and empiric antibiotic prophylaxis initiated.

During treatment repeated wound swabs were collected for bacteriological investigation: 1 on admission – Aeromonas hydro/cavie (+++), E. coli (+++), Enterococcus faecium (+++), Enterococcus faecalis (+++), Candida albicans (+), anaerobic bacteria (-); during hospitalization: 2 – Proteus mirabilis (+/+), Enterococcus faecalis (+), filiform fungi (+/+), anaerobes: Bacteroides spp. (+); 3 – Proteus mirabilis (+++), E. coli (+++-), Staph. haemolyticus MRCNS (+), Staph. spp. Coag. Neg. MRCNS (+); 4 – E. coli (+), anaerobic bacteria (-), each time modifying antibiotics, according to the antibiogram. During hospitalization the patient received amoxicillin with clavulonic acid, metronidazole, gentamicin, ketokonazole, tazobaktam with piperacillin and co-trimoxazole.

Due to low hemoglobin levels two units of blood were transfused. During hospitalization the patient underwent four surgical interventions, consisting in the excision of necrotic tissues under anesthesia, and numerous necrotic tissue removal without anesthesia. Specialistic dressings were used: complex (initially activated with Ringer's solution), hydrocolloid, and hydrocolloid alginate, in order to obtain gradual wound cleansing and reduction of soft tissue edema of the foot (fig. 3, 4).

After wound debridement and obtaining red granulation tissue the patient was qualified...
for final surgery, which was performed on the 43-rd day of treatment. During the surgical procedure, partial excision of the left necrotic long extensor muscle of the toe, and flexor muscles of the great toe was performed. The defects were covered with mesh skin grafts on the dorsal and medial surface of the foot.

After surgery the foot was immobilized in a plastic cast. Thanks to treatment the skin grafts were well-received with preserved motor function of the foot (fig. 5, 6).

The patient was discharged from the hospital after 59 days with recommendation for further follow-up at the surgical outpatient clinic and continued rehabilitation.

**DISCUSSION**

The clinical picture of patients with injuries related to accidents involving animals can be very different (1). It depends on, amongst other things, on the type of teeth, bacterial flora of the mouth, typical aggressive behavior, and often of the behavior of the human being.

Camels are not typically classified as wild animals, which does not change the fact that their behavior can sometimes be aggressive and life-threatening for the human being (2, 3). Aggressive behavior is mostly observed during the fertile period of these animals (2, 4). Typical for camels are injuries inflicted to the head, neck, shoulder joints, upper and lower extremities, nearly always caused by means of the same method: biting and raising the part of the body, followed by shaking, throwing the victim to the ground and crushing her with its own weight, often amounting to 600 kg in an adult animal (1, 3, 5). The mechanism of injury and aggressive behavior of the camel towards our patient corresponded to the typical picture of an injury inflicted by the animal, described in literature data.

According to literature data, 15-20% of animal bites are associated with local or systemic infection of the organism (6-10). The percentage of infectious complications is much greater in case of injuries caused by camels, amounting to 86% (10). Badejo et al. demonstrated in their study more than 64 different strains of bacteria present in the oral cavity of a camel, which could be a potential source of infection (11). The culture collected from the patients suppurating wound showed typical bacterial flora from the camels oral cavity, which according to the antibiogram demonstrated typical bacterial resistance to selected antibiotics. According to Suess et al. the above-mentioned resistance is attributed to the frequent treatment of animals with antibiotics, as well as addition of antibiotics to food (12).

The minor differences in the type of microorganisms in our culture are probably due to the colonization of other pathogens associated with a different climate and nutrition in Poland. The overall hospitalization period in our department amounted to 59 days, which compared to hospitalization in areas of natural camel occurrence can be considered as a very good result (11). One should not forget that return of complete motor function of the foot after such injuries is associated with proper surgical and conservative treatment, as well as early rehabilitation of the patient.

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*Fig. 5, 6. Local condition after skin grafts*
CONCLUSIONS

In the era of frequent foreign travel for recreational purposes to countries with the natural presence of camels, and more frequent occurrence of wild animals in agro-tourism farms in Poland, it seems that in daily practice, more often, one will meet unusual examples of injuries caused by atypical animals.

REFERENCES


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