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Positional asphyxia: accidental death due to head-down position in a badger sett

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SUMMARY
Death from positional asphyxia occurs when the victim is found in a position that interferes with adequate breathing. We present an unusual case of a 67-year-old man who was found deceased trapped in a badger sett. The autopsy revealed marked congestion, cyanosis and a multitude of pinpoint hemorrhages in the face, neck and upper chest. Confluent scleral and conjunctival hemorrhage were observed and numerous petechial bleedings were found in the oral mucosa and within the reflected scalp. Death was attributed to positional asphyxia due to head-down position in a badger sett.

Keywords: positional asphyxia – head-down position – badger sett – autopsy

Polohová asfyxia: náhodná smrť v polohe dolu hlavou v jazvečej nore

SÚHRN
Zadusenie pri nepriaznivej polohe tela môže nastať pri takej polohe, ktorá znemožňuje alebo podstatne obmedzuje normálne dýchanie. Autori v kazuistite popisujú prípad 67-ročného muža, ktorý bol nájdený bez známok života v jazvečej nore v polohe dolu hlavou. Pri pitve sa zistili celkové známky dusenia, výrazné prekrvenie hornej polovice tela s početnými krvnými výronmi v koži tváre, krku a hornej časti hrudníka, v očných spojovkách, v ústnej sliznici a v mäkkých lebečných pokrývkach. Bezprostrednou príčinou smrti bola polohová asfyxia v polohe dolu hlavou v jazvečej nore.

Kľúčové slová: polohová asfyxia – poloha dolu hlavou – jazvečia nora – pitva

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Death from positional or postural asphyxia occurs when the decedent is found in a position that interferes with pulmonary gas exchange (1). Positional asphyxia in a head-down position is a rare event and is infrequently reported in the literature. This paper describes an unusual accidental death due to head-down position in a badger sett.

CASE REPORT

A 67-year-old hunter who had been missing for 2 days was found deceased trapped in a badger sett. He was last seen on a Friday afternoon after he went to borrow a camera trap from a friend. The badger sett was located on a meadow approximately 700 meters from the nearest town. A well-worn path was leading to the dome-shaped entrance of the sett which was situated almost one meter below the ground's surface covered with densely growing wild rosehip bushes. A large spoil heap of soil and discarded bedding outside the entrance was evident. A hunting knife, plastic tightening tapes, binoculars and a textile bag were found leading up to the sett entrance. The deceased was found wedged at a 90-degree angle (Fig. 1) in the hole leading to the sett entrance in a head-down position with his head, right shoulder and right upper limb being stuck in the sett (Fig. 2). A pair of rubber boots were present next to the body. After removing the body from the entrance, a camera trap was found placed in the badger sett (Fig. 3). The deceased had hypertensive disease and a history of alcohol consumption on a regular basis.

At autopsy, the body was that of an adult white male of around the stated age of 67 years. External examination of the body showed hypersthenic habitus with body mass index of 30.4 kg/m2 (175 cm, 93 kg). The right side of the face and the hands were covered with soil and leaves. A small amount of blood-tinged fluid was oozing from the nostrils. Superficial bruises of the left hand and the right thigh were noted. Marked congestion, cyanosis and a multitude of pinpoint hemorrhages in the face, neck and upper chest were the most striking findings. Severe congestion of the right upper limb was evident (Fig. 4). Confluent scleral and conjunctival hemorrhage were observed (Fig. 5). Numerous petechial bleedings were found in the oral mucosa (Fig. 6) and within the reflected scalp. Internal examination demonstrated multiple scattered hemorrhages within the sternocleidomastoid and the intercostal muscles. The soft tissues of the neck were markedly congested. Severe pulmonary and cerebral edema were present. There were no significant injuries observed. The enlarged liver weighted 2180 g and showed mild fatty changes. The coronary arteries showed moderate atherosclerosis. The significantly enlarged heart weighted 570 g. Microscopic examination of the heart showed focal accumulation of amorphous eosinophilic material in the interstitium and in the intramural branches of the left ventricle. Congo red stain confirmed the presence of amyloid. Toxicological evalua-

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Fig. 1. The body was wedged at a 90-degree angle in the hole leading to the sett entrance in a head-down position.



Fig. 3. The camera trap placed in the badger sett.



Fig. 4. Severe congestion and cyanosis of the right upper limb.

tion revealed a blood alcohol level of 1.25 g/kg. Death was attributed to positional asphyxia due to head-down position in a badger sett.



Fig. 2. The victim's head, right shoulder and right upper limb were stuck in the badger sett. A pair of rubber boots were found next to the body.



Fig. 5. Confluent scleral and conjunctival hemorrhage.



Fig. 6. Numerous petechial bleedings in the oral mucosa

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DISCUSSION

Death from positional asphyxia occurs when the victim is found in a position that interferes with adequate breathing (1-3). In this entity, the victim becomes trapped in restricted spaces and is unable to escape of that area or position (2,4). Other causes of death, both natural and violent, must be excluded (1,2).

In this case, the deceased was found in a head-down position, wedged at a 90-degree angle in a hole leading to a badger sett entrance. The inverted position interfering with pulmonary gas exchange (5), the weight of the abdominal organs severely restricting diaphragm movements (1,6), and the full weight of the body bearing down on the head and the neck were the key mechanisms of death in this case. In addition, the head of the deceased was trapped in the entrance of the badger sett – an oxygen-depleted environment, leading to asphyxiation. The rubber boots stripped from the body and the superficial bruises of the extremities are indicative of self-rescue attempt. The density of petechiae in the skin and conjunctivae of the deceased are suggestive of slow, protracted asphyxia. The diagnosis of positional asphyxia often relies on an accurate evaluation of the death scene and exclusion of injuries or underlying diseases (7). Photographs taken at the scene clearly indicate the inability of the deceased to extricate himself from the position found. Positional asphyxia is almost always accidental and is often associated with alcohol or drug intoxication (2,4). In the reported case, major risk factors for positional asphyxia were obesity, inebriation and older age. Additional factors that may have contributed to or accelerated the demise of the deceased are the enlarged heart and cardiac amyloidosis.

Recording devices such as small action cameras and camera traps are rapidly becoming popular among thrill-seeking adventurers and nature explorers. Recordings from such devices can be of great forensic importance in elucidating unusual fatalities such as geocaching-related deaths (8) or cases involving individuals who are exhibiting dangerous behavior with a lack of self-awareness (9). No pictures or videos were found on the camera trap in the reported case.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

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