Trichobezoar: A possible cause of death in Eurasian Griffon (*Gyps fulvus*) - a case study

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Introduction

The word bezoar is derived from the Arabic "bad her" or from the Persian "bad air", and it means antidote (De Bakey and Ochsner, 1938). A bezoar is an accumulation of exogenous matter in the stomach or intestine. Trichobezoars also called as "Rapunzel Syndrome" is composed of hair and is rare in species (Balik *et al,* 1993). Although trichotillomania (irresistible will to pull out the own hair) was only described in 1889 by Hallopeau, the first report of a trichobezoar case occurred in 1779, by Baudamant. The first surgical excision was performed by Schonborn in 1883.

Trichobezoar is a hairball having a small collection of hair in the stomach of animals that is occasionally vomited up when it becomes too big. Hairballs are primarily a tight elongated cylinder of packed fur, but may include bits of other elements such as swallowed food. Hairballs are sometimes mistaken for other conditions of the stomach such as lymphosarcoma, tuberculosis, and tumour of the spleen. The rhythmic peristaltic contractions of the stomach in the presence of a trichobezoar could generate abrasive forces, disrupting the normal defensive barriers and allowing for auto digestion of the abomasal wall. The presence of hairballs might cause obstruction in the pyloric opening and interfere the passage of ingestion (Fromsa and Mohammed, 2011; Mohajeri *et al.,* 2012).

The Eurasian Griffon, a bird species characteristic of arid zone, is categorized as Least Concern in the IUCN Red List (BirdLife International, 2015). Eurasian Griffon migrates mostly to western India in winters in for feeding and releasing heat stress. They are consequently threatened by habitat loss, food availability and anthropogenic activity. During on regular field study of Eurasian Griffon roosting sites in Jodhpur district, Rajasthan on 11, January 2014, the authors found three dead individuals of Eurasian griffon at the Arna Jharana hills (26°17'2.36"N 72°53'15.34"E). Our experience with this incident and consultation with veterinary doctor suspects a new cause of vulture death as trichobezoar.

Jodhpur district in Rajasthan has one of the largest reported breeding sites of vultures and is one of the few places in India where four species viz. *Gyps indicus*, *Gyps bengalensis*, *Sarcogyps calvus* and *Neophron percnopterus* breed per year in the dry season (February–May). This occurs because of sufficient food availability in the region. The dumping site for carcass waste in Jodhpur is the best site for vulture study in Jodhpur. In a study, it was determined that diclofenac drug causes a drastic mortality to a vulture. In addition, feral and unmanaged dogs hunting, electrocution and some undefined reasons of vulture death in the early migration event were also noticed (Chhangani and Mohnot, 2004; Saran and Purohit, 2012). In the arid landscape of Rajasthan where water scarcity is a major concern, retention of minimum water levels, and protection and management of this dumping site, is beneficial for them.

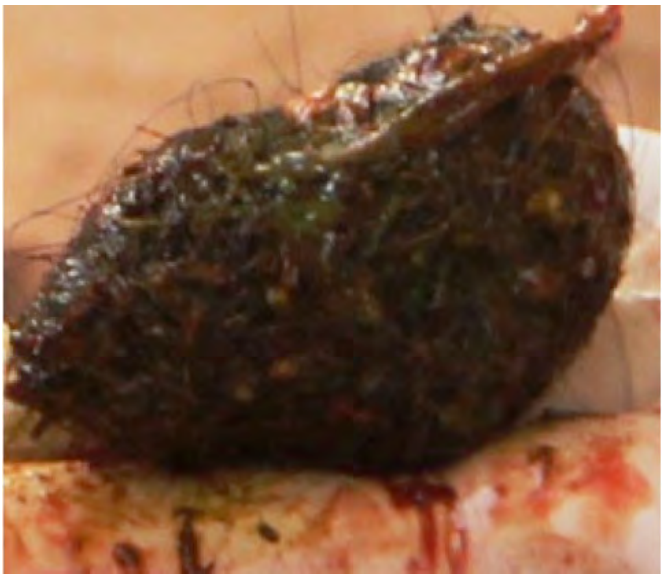

Fig 1. Hairball

Study Area

The study site, Jodhpur (26°17'59" N and 73°02'02" E) is situated in the western part of Rajasthan and is a prominent part of great Indian Thar Desert. Topographically, it is by and large, plain and open interrupted by hillocks. During summer, the temperature ranges between 6° C to 45° C while in May and June it rises up to 49° C. The annual average rainfall is 300 mm, distributed over 20 rainy days. This wide range of climatic condition has led to the formation of different habitat types of vulture in and around the city of Jodhpur.

Methods

On a regular visit to the Arna Jharna hill site to monitor the breeding and roosting sites of vulture, we found three dead specimens of the *Gyps fulvus*. Initially, it seemed as a casual death but we took the specimens to Central Zoo of Jodhpur. In an attempt

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Table: Dimensions of trichobezoar found in Vulture

Weight of Hairball	6.5 gm
Width	3.1 cm
Length	6.0 cm
Overall weight of animal	6.5 kg

to reveal the death cause of the vultures, surgical post-mortems carried out by Dr. Vithlesh Vyas on 11, January 2014.

Observation

Post mortem examination of the vulture revealed the presence of hairballs in the abdominal region (Fig. 1). Formation of hairballs in the gastrointestinal tract of animal might be due to wool plucking. The whole body was opened for investigation. Skull, brain, cervical vertebrae, uterus, bladder, genital passage, forelimbs and hind limbs were not opened, whereas lungs, liver and kidney were found to be collapsed and putrified. Blood in the heart was totally clotted and RBC's were in normal shape. The hairball was found in the pre-oesophagus region in the alimentary canal. Except this, no significant abnormality was observed. Any other biological test, blood test, urine test, discharges and biopsy were not carried out.

Discussion

Trichobezoars are composed of the patient's own hair, and phytobezoar is composed of a combination of plant and animal material (Byrne 1994).

Trichobezoar in oesophagus was reported firstly in this investigation, although this phenomenon has been reported as a death causing reason for many other mammals (Krugner-Higby *et al.,* 1996, Lee *et al.,* 1978 and Gillett *et al.,* 1983). Trichobezoars are resistant to enzymatic dissolution, and must be removed endoscopically or surgically (Dumonceaux *et al.,* 1998).

This investigation results in a new reason of bird death in Eurasian Griffon by hairball blockage in the oesophagus. The prediction can be made as there is food scarcity as well as competition for feeding on soft tissue at the Keru dumping station. The municipal carcass waste treatment plant was initiated by the district government in the year 2006. The indirect adverse effect was seen in the migratory and local status of the vulture (Rahmani, 1998). The carcass of animals is utilised there for treatment. This small remnant is to be consumed by not only the six species of scavengers but also a complex food web as feral dogs, oriental white ibises, black kites, large-billed crows, ravens, house crows, little egrets, cattle egrets, rodents and voracious carnivores in the region. The accumulation of hairs increases with time and the hairball gets arrested in the upper oesophagus. Due to this, the bird will not able to regurgitate and ultimately it leads to death due to the inability of food engulfment and asphyxia.

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