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## Pathomorphological studies on collected from slaughtered dogs in Aizawl district of Mizoram

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**Abstract**

Samples for present study were collected from 27 slaughtered dogs and examined for gross and microscopic changes. Samples from different vital organs were collected and processed for histopathological examinations. Anthracosis and pneumonia in lungs, congestion, haemorrhages and hepatic necrosis in liver, hemosiderosis in spleen and tubular degeneration in kidney were the major pathological changes that were observed from sample collected from slaughter house.

**Keywords:** Slaughtered, dogs, specimens, gross, histopathology

**Introduction**

The domestic dog *Canis familiaris*, reportedly bears over 450 diseases approximately 360 of which are analogous to human diseases [1]. The slaughter and consumption of dog meat has been reported worldwide since antiquity. The practice of slaughter and consumption of dog meat has been reported in most continents and countries across the globe. Presently, meat of dogs and cats is mainly consumed in countries like Cambodia, China, Mexico, Rome, South Korea, Thailand, Vietnam, India, Indonesia as well as in Africa including Cameroon, Ghana and Nigeria [2]. People of the northeast region especially the tribal population are known to consume dog meat since age old days. Studies on pathological lesion on slaughter house specimens plays an important role, as in some parts of the country, dogs slaughtered house plays an important role in transmission of diseases from dogs to human and vice versa.

In 2010, a study in Sokoto and Katsina State from Northwestern Nigeria found that 28% of apparently healthy dogs slaughtered for human consumption had rabies virus antigen in their brain [3]. Earlier findings from north eastern Nigeria (Borno State) revealed 31% of apparently healthy dogs slaughtered for human consumption had rabies antigen in their brain [4] indicating that humans could become exposed and infected. Dogs slaughter houses are becoming a major source of rabies transmission from dogs to humans and among dogs [5]. Dog meat is a delicacy in many countries including Nigeria and it has about 44.4 mg/100 g of cholesterol [6]. Garba and his co-workers observed that 64% of the respondents consume dog meat because it is a delicacy, 18.4% for its medicinal values, 8.8% inherited the practice from their parents and 1.6% as a cheap source of protein [7]. The unhygienic conditions of the slaughter-houses are alarming and this has been shown to aid the transmission of rabies and other infectious diseases [8]. The study was conducted between August 2017 and May 2018. Gross and histopathological examination was conducted for dog collected from slaughtered dogs in Aizawl District of Mizoram. The present paper report on the pathological changes collected from slaughtered dogs.

**Materials and methods****Ethical approval**

Not applicable as there were no animal experiments carried out in this study.

**Sample collection**

Tissue samples were collected from dogs that are slaughtered for meat purpose in the Aizawl district of Mizoram. Tissues sample mainly liver, lungs, heart, kidney, spleen and intestine were collected in 10% neutral buffer formalin.

**Histopathological examination of tissues**

Formalin fixed tissues (2-3 mm thick) were taken, washed overnight in running tap water and then dehydrated in ascending grades of alcohol starting from 30%, 50%, 70%, 90% and

absolute alcohol I, absolute alcohol II and finally cleared in xylene. These dehydrated tissue pieces were embedded in molten paraffin. Sections were cut at 4-5  $\mu\text{m}$  thick with semi-automatic rotatory microtome (MRS 3500, Histoline Laboratories) and stained with Mayer's hematoxylin and eosin [9]. The stained slides were examined under a trinocular research microscope (Olympus) and the magnified images of the tissue structures were captured for further study.

### Results and Discussion

Samples for present study were collected from 27 slaughtered dogs. Macroscopically, lungs were the common affected organs indicated by pulmonary hemorrhages, presence of black spots indicating anthracosis and pneumonic changes (Fig.1). On incision frothy discharge oozed out. Liver was enlarged, congested and friable. Kidney was showing medullary congestion and the capsule were hard to peel off (Fig.2). Macroscopic necropsy findings of this study are similar to findings with other workers [10, 11]. Histopathological examination of lungs revealed deposition of carbon particles in the interalveolar septa and pulmonary hemorrhage (Fig.3) [11, 12]. Hemosiderosis in spleen (Fig 4), congestion, hemorrhage and infiltration of inflammatory cells in liver (Fig.5) were common findings [13, 14]. Congestion of the kidney on the both sides of the cortex was also common findings. Kidney was showing severe hydropic tubular degeneration along with infiltration of inflammatory cells (Fig.6) which is in agreement with the findings of other workers [14, 15]. During the study period major gross pathological changes includes presence of black spots indicating anthracosis and pulmonary hemorrhage. Liver was enlarged and dark brown in colour. Kidney showed medullary congestion and the capsule were hard to peel off. Common histopathological lesion include deposition of carbon particles in the interalveolar septa in lungs, hemosiderosis in spleen and hydropic degeneration in kidney. No other major pathological changes could be observed from specimens collected from slaughtered house.

### Summary

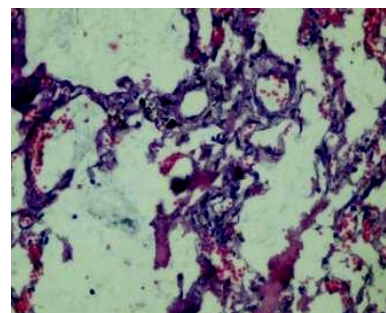
Dogs for slaughter are usually transported in hard body vehicle without soft beddings for long period of time. There is suspicion of non-maintenance of animal transport procedure as per rules. The animals were exposed to travelling stress, improper feeding and watering with overcrowded space and unfavorable external environment. Due to the above mentioned, the dogs may show such affections described in vital organs. These can also signify an alarming need for awareness and education to public and especially the persons related to animal transport about the ethical procedures of handling, restraining and transport of animals.



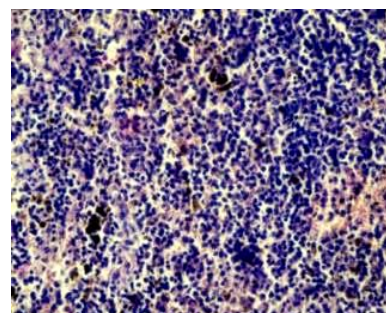
**Fig 1:** Lungs: Pulmonary hemorrhage and edema



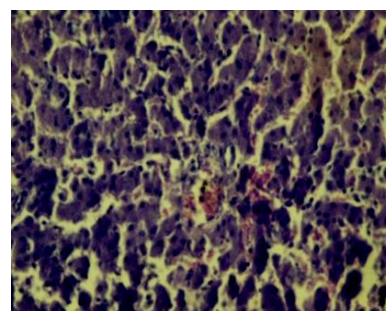
**Fig 2:** Kidney: Congestion on the cortex and medulla



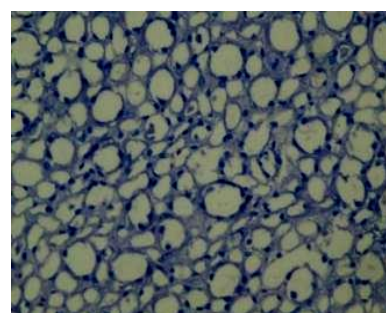
**Fig 3:** Lungs: Anthracosis and congestion of blood vessel in the interalveolar septa (H & E, 400x).



**Fig 4:** Spleen: Haemosiderin along with infiltration of inflammatory cells (H & E, 400x).



**Fig 5:** Liver: Hemorrhage and infiltration of inflammatory cells (H& E, 400x).



**Fig 6:** Kidney: Hydropic tubular degeneration (H & E, 400x).

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