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## Occurrence and pathology of hydatidosis in pig (*Sus scrofa domesticus*)

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### Abstract

A total number of 545 specimens of liver of pig were collected from organised and unorganised farms of Bikaner, Jaipur and Alwar districts of Rajasthan. Out of these, 157 specimens showing frank macroscopic lesions were further processed for histopathological examination. Hydatidosis was reported in 15 (9.55 per cent) cases. Grossly, A single cyst measuring 3 cm in diameter was noticed on the surface of liver. It contained clear watery fluid and distinct whitish, thick cyst wall. Microscopically, the cyst consisted of hyaline cyst wall surrounded by fibrous connective tissue capsule infiltrated with large numbers of eosinophils, mononuclear cells and plasma cells.

**Keywords:** Hydatidosis, liver, pig, histopathology

### Introduction

Pigs are crucial to the economic well-being of small-scale farmers and pig farmers. Indigenous pigs are prospering and competing for attention from scientists. To improve the socio-economic condition of poor pig raisers, commercial pig farming for meat production requires scientific propulsion (Singhal 2019) [13].

Hydatidosis is an important zoonotic infection causing morbidity and mortality in humans and significant economic losses in livestock (Budke *et al.*, 2006) [4]. Hydatidosis is caused by *Echinococcus granulosus* (Bruzinskaite *et al.*, 2009 and Estheru, 2010) [3, 5]. Hydatidosis is a zoonotic disease that affects both animals and humans. It is caused by the larval stage (metacestodes) of the dog tapeworm *Echinococcus granulosus*, which has two mammalian hosts in its life cycle. Carnivores like canines are definitive hosts, while herbivores and omnivores are intermediate hosts, with cysts developing in the liver, lungs, and other organs (Sangaran and John., 2009) [12].

### Materials and Methods

In the present study, a total number of 545 specimens of the liver of pig of different age groups, sex and breeds were collected from organized and unorganized farms of Bikaner, Jaipur and Alwar districts of Rajasthan. Out of these, 157 samples showing frank macroscopic lesions were used for further histopathological examination. The samples were properly preserved in 10 percent formalin and processed mechanically for paraffin embedding by acetone benzene technique (Lillie, 1965) [9]. Sections of 4-6 micron thickness were cut and stained with haematoxylin and eosin method.

### Results and Discussion

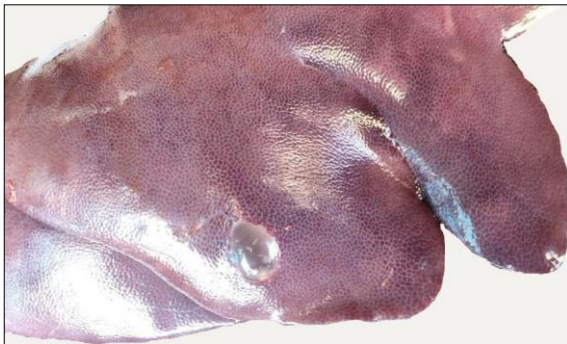
Hydatidosis condition was recorded in 15(9.55 per cent) cases. Higher occurrence was recorded by Moudgil (2020) [10] in sheep (43.64 per cent) and goats (37.10 per cent). Similar occurrence was recorded by Goswami (2002) [6] as 9.86 per cent in cattle. Whereas, lower occurrence was recorded by Estheru (2010) [5] as 0.83 per cent, Mundotiya (2018) [11] as 27.21 per cent in sheep and Ahmedullah (2007) [1] as 2.5 per cent. Unhygienic and poor management, grazing on contaminated pasture, and the presence of a significant number of stray dogs around pig farms may be possible causes of variance in incidence.

Grossly, a single cyst measuring 3 cm in diameter was noticed on the surface of liver. It contained clear watery fluid and distinct whitish, thick cyst wall (Fig.1 & 2). These findings were in close conformity with the observation of Komine (2007) and Estheru (2010) [8, 5].

Microscopically, the cyst consisted of hyaline cyst wall surrounded by fibrous connective tissue capsule infiltrated with large numbers of eosinophils, mononuclear cells and plasma cells (Fig.3). Almost similar observation was recorded by Kalai (2009), Ahmedullah (2007) and Estheru (2010) [7, 1, 5].

Grossly, a single cyst measuring 6.0 cm in diameter was noticed on the ventral surface in one liver. It contained clear watery fluid and distinct whitish, thick cyst wall. Examination of the cyst fluid revealed invaginated scolices of *Echinococcus granulosus*. Few cysts were also present deeply in the parenchyma of the liver. Microscopically, the cyst consisted of hyaline cyst wall surrounded by fibrous connective tissue capsule infiltrated with large numbers of eosinophils, mononuclear cells and plasma cell, were in line with Estheru (2010) [5].

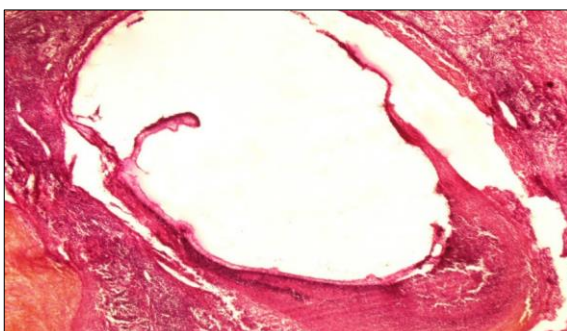
On histopathological examination of hydatid cyst, it revealed a thick coat of granulation tissue around the cyst causing fibrosis and an inflammatory reaction composed of fibroblasts and mononuclear cells. Hepato-cellular degeneration was seen around the periphery of the cysts in the liver (Moudgil *et al.* 2020) [10].



**Fig.1:** Gross photograph of liver showing hydatid cyst



**Fig 2:** Gross photographs of liver cut surface showing hydatid cyst containing serous fluid



**Fig 3:** Microphotograph of liver showing hydatid cyst surrounded by infiltrating cells H&E. 40X

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## References

1. Ahmedullah F, Akbor M, Haider MG, Hossain MM, Khan MAHNA, Hossain MI, *et al.* Pathological investigation of liver of the slaughtered buffaloes in Barisal district, Bangladesh Journal of Veterinary Medicine, 2007, 81-85.
2. Boro P. Characterization and documentation of desi pig of Bareilly district, Ph.D. thesis submitted to Indian Veterinary Research Institute, Izatnagar, 2016.
3. Bruzinskaite R, Sarkunas M, Torgerson PR, Mathis A, Deplazes P. Echinococcosis in pigs and intestinal infection with *Echinococcus* spp. in dogs in southwestern Lithuania, Veterinary parasitology. 2009;160(3-4):237-241.
4. Budke CM, Deplazes P, Torgerson PR. Global socioeconomic of cystic echinococcosis, Emerg. Infect. Dis. 2006;12:296-303.
5. Estheru S. studies on the pathology of spontaneous liver lesions in pigs, M.V.Sc. thesis submitted to Sri Venkateswara Veterinary University, Tirupati – 517 502. (A.P.), 2010.
6. Goswami S. Incidence and classification of liver lesions in cattle, M.V.Sc. theses, submitted to Rajasthan University of Veterinary and Animal Sciences, Bikaner, 2002.
7. Kalai K. Pathological Alterations in Slaughtered Swine in and Around Mumbai, Ph.D. submitted to Maharashtra Animal and Fishery Sciences University, Nagpur, 2009.
8. Komine M, Kawasako K, Akihara Y, Shimoyama Y, Okamoto M, Matsuda K, *et al.* Multiple hepatic peribiliary cysts in a young pig, Veterinary pathology. 2007;44(5):707-709.
9. Lillie RD. Histopathological technique and practical histochemistry, Mc Graw Hill Book co., New York and London, 1965.
10. Moudgil AD, Moudgil P, Asrani RK, Agnihotri RK. Hydatidosis in slaughtered sheep and goats in India: prevalence, genotypic characterization and pathological studies, Journal of helminthology, 2020, 94.
11. Mundotiya H. Occurrence and pathology of various conditions in liver of sheep (*Ovis aries*) in southern region of Rajasthan, M.V.Sc. thesis submitted to Rajasthan University of Veterinary and Animal Sciences, Bikaner, 2018.
12. Sangaran A, John L. Prevalence of Hydatidosis in sheep and goats in and around Chennai, Tamilnadu J Vet. Animal Sci. 2009;5(5):208-210.
13. Singhal SS, Ruchi M, Sunita P, Saini BS, Mamta S, Ashish J, *et al.* Variations in erythrocytic antioxidants in indigenous pig from arid tracts during hot and cold ambiances, Veterinary Practitioner. 2019;20(1):18-20.