



Original Research

Prevalence of Hepatic Jaundice in Indigenous Cattle in Marathwada Region of Maharashtra

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Abstract

The present study was carried out to determine the prevalence of hepatic jaundice in indigenous cattle from Marathwada region of Maharashtra state. On screening of 1325 clinical cases of cattle, 51 were confirmed clinically and biochemically positive for hepatic jaundice with an overall hospital prevalence of 3.84 %. Higher prevalence of hepatic jaundice was observed in cattle less than 4 years (5.70%) followed by more than 8 year old (2.84%) and least in 5-8 year (1.79 %) old cattle. The breed-wise highest prevalence of 9.71% was recorded in Red Kandhari followed by non-descript (2%) and least in Deoni (1.47%). Sex specific prevalence showed occurrence of hepatic jaundice in male cattle only. The maximum disease prevalence was recorded during monsoon (6.98%) and post monsoon (6.5%) season with highest prevalence in July (11.93%).

Key words: Hepatic Jaundice, Indigenous Cattle, *Lantana camara*, Photosensitization, Red-Kandhari

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Introduction

Jaundice (from the French 'jaune' meaning yellow) is referred as the yellowish discoloration of the skin, sclera and mucous membranes that accompanies deposition of bilirubin in tissues (Chaudhury *et al.*, 2010; Briggs *et al.*, 2010). Jaundice is the consequence of either abnormal haemolysis, or liver cell and bile duct disorders, in which the hepatic uptake, metabolism, or biliary excretion of bilirubin is impaired (Stephen and Williams, 2003). Jaundice develops when serum bilirubin levels are elevated above 2 mg/dl. Bilirubin is an end product of heme metabolism, which is responsible for yellow discoloration of the sclera (Moses *et al.*, 1978). Hepatocellular jaundice also known as toxic jaundice occurs due to inability of bilirubin to



leave the liver cells and being not removed from body by kidneys. It is usually caused by liver failure, liver disease (cirrhosis), hepatitis (inflammation of the liver) or by certain types of medication and poisons. Literature on prevalence of hepatic jaundice in cattle is very scarce (Bhikane *et al.*, 2010). The present study recorded the prevalence of hepatic jaundice in indigenous cattle in Marathwada Region of Maharashtra.

Materials and Methods

Study Animals

A total of 1325 clinical cases of cattle admitted to Teaching Veterinary Clinical Complex and Department of Veterinary Clinical Medicine, Ethics and Jurisprudence, College of Veterinary and Animal Sciences, Udgir from Latur and Nanded districts of Marathwada during June 2016 to May 2017 were screened for hepatic jaundice. Fifty-one cattle diagnosed for hepatic jaundice on the basis of history of passage of dark yellow colored urine, the characteristic icteric mucosae, biphasic Van den Bergh's reaction and elevated values of both plasma direct and indirect bilirubin formed the material for the present study.

Data Collection

The information pertaining to district, tehsil (blocks), age, sex, breed, water source, month, season, feeding pattern and predisposing factors, if any were collected in affected cases for computation of prevalence.

Prevalence

The hospital prevalence of cases of hepatic jaundice in cattle in relation to breed, age, sex, month and season were calculated. The age groups were divided in to less than 4, 4-8 and more than 8 years. The seasons were classified as monsoon (June-September), post monsoon (October-November), winter (December-February) and summer (March-May).

Statistical Analysis

Statistical analysis was carried out as per method described by Snedecor and Cochran (2014). The Chi-square (X^2) value was calculated to determine the significance of association between disease and hypothesized causal factor. The following formula was used as-

$$X^2 = \frac{O - E}{E}$$

Where,

X^2 - Chi-square; O- Observed animals; E- Expected animals

Result and Discussion

Out of 1325 clinical cases of cattle screened, 51 were found clinically positive for hepatic jaundice indicating an overall hospital prevalence of 3.84 %. Breed, age, sex and season-wise prevalence of hepatic jaundice in indigenous cattle is depicted in Table 1.

Table 1: Breed-wise, age-wise, sex-wise and season-wise prevalence of hepatic jaundice in cattle

Parameter	Variable	No. Screened	No. Affected	% Cases	% Prevalence	X ²
Breed	RK	381	37	72.54	9.71	0.00**
	Deoni	330	6	11.76	2	
	ND and other	614	8	15.68	1.47	
	Total	1325	51	100	3.84	
Age	<4 years	648	37	72.54	5.7	0.002769**
	4 - 8 years	501	9	17.64	1.79	
	>8 years	176	5	9.8	2.84	
	Total	1325	51	100	3.84	
Sex	Male	869	51	100	5.86	0.00**
	Female	456	0	0	0	
	Total	1325	51	100	3.84	
Season	Monsoon (June- Sept)	624	38	74.5	6.08	0.000**
	Post Monsoon (Oct-Nov)	200	13	25.49	6.5	
	Winter (Dec-Feb)	246	0	0	0	
	Summer (March-May)	255	0	0	0	
	Total	1325	51	100	3.84	

**Highly significant

District wise Distribution

District wise more number of cases were reported from Nanded (72.54%) district as compared to Latur district (27.45%). In Nanded district maximum number of cases were recorded in Kandhar tehsil (62.74%) followed by Mukhed (5.88%), Loha and Naigaon (1.96% each). In Latur district maximum cases were reported from Nilanga (7.84%) followed by Shirur Anantpal and Chakur (5.88% each), Udgir (3.92%), Deoni and Jalkot tehsil (1.96% each). It is evident from the data that the maximum number of cases reported from hilly non-irrigated and drought prone area of Latur and Nanded district especially Kandhar tehsil. This could be attributed to the non-availability of sufficient greens for grazing animals and thereby access to toxic plant, *Lantana camara* which is a very hardy shrub, capable of prospering in adverse soil and condition and causes hepatotoxicity in grazing livestock (Garg, 2007).

Breed-wise Prevalence

Breed-wise maximum number of cases were found in Red Kandhari cattle (9.71%), followed by non-descript cattle (2%) and least in Deoni cattle (1.47%). No case of hepatic jaundice was recorded in crossbred cattle. The effect of breed on prevalence status was found to be significant ($P < 0.01$). The higher occurrence of hepatic jaundice among Red- Kandhari breed as compared to non- descript and other breeds of cattle may be attributed to more prevalence of toxic plant in the native tract of Red Kandhari cattle i.e. Kandhar tehsil of Nanded district. Similar to present observations Bhikane *et al.* (2010) observed breed wise highest occurrence of jaundice in Red Kandhari (75%) cattle as compared to Deoni or non-descript (ND) cattle

(25%). On the contrary, Sharma and Wadhwa (2009) reported higher incidence of jaundice due to lantana toxicosis in Jersey cattle (50%) as compared to local breeds.

Age-wise Prevalence

The age-wise prevalence of hepatic jaundice in cattle showed highest occurrence in less than 4-year-old cattle (5.70%) followed by 5-8 years (1.79%) and more than 8 years (2.84%). No case was recorded in cattle below one year of age. The effect of age on prevalence of hepatic jaundice was found to be significant ($P < 0.01$). Similar to present observations Bhikane *et al.* (2010) observed that age-wise occurrence was 62.50 % cases in cattle below 2 years of age and remaining 37.50 % in animals of 3 to 8 years of age. Earlier Reddy *et al.* (2002) and Kumar *et al.* (2012) and recently Ekambaram *et al.* (2014) have reported higher morbidity and mortality in young sheep in *Lantana camara* induced jaundice. Sharma and Wadhwa (2009) reported 53.30 % cases of jaundice due to lantana toxicosis in animals below 1 year of age and remaining 46.67% in animals of 1 to 7 year age group. However in the present study lantana toxicity was not observed in cattle below one year of age probably due to their limited movement for grazing, they might not be exposed to lantana plants. Once the animals were introduced for regular grazing, high morbidity and mortality was observed as they were unfamiliar with the plants and could be attracted to multi colored flowers of lantana.

Sex-wise Prevalence

The analysis of sex-wise data revealed cent-percent occurrence of hepatic jaundice in male cattle (5.86%). The effect of sex on prevalence status was found to be highly significant ($P < 0.01$). Similar to present findings Bhikane *et al.* (2010) revealed occurrence of jaundice in male cattle only. However, Sharma and Wadhwa (2009) reported sex-wise significantly higher incidence of jaundice due to lantana toxicosis (83.33%) in female cattle.

Month-wise Prevalence

Month wise prevalence of hepatic jaundice in cattle was 11.93% in July, 3.59% in August, 3.13% in September, 7.63% in October and 4.87% in November month (Table 2). Disease was not reported during December to June months of study period. The effect of month on prevalence status was found to be significant ($P < 0.01$). The results of present study with respect to month wise occurrence of disease are in agreement with Singh *et al.* (2003) and Kumar *et al.* (2009). Ekambaram *et al.* (2014) reported higher incidence of *Lantana camara* poisoning during months of July, August and September in sheep flocks. Singh *et al.* (2003) reported jaundice and photosensitization due to lantana toxicity during month of June in sheep flock affecting 150 sheep near Bilaspur town of Rampur district of Uttar Pradesh. Kumar *et al.* (2009) reported an outbreak of lantana poisoning in 76 hogget's of Nellore breed of sheep in month of

August. The occurrence of hepatic jaundice in the present study was highest in months of July to October which might due to highest concentrations (1.4 -1.7%) of Lantadenes in lantana plant leaves during this period as compared to March-April (0.2%) months (Sastry and Singh, 1963). Subsequently Sharma *et al.* (1980) also reported more Lantadene A (5-7 mg) in lantana leaves during the months of July to August.

Table 2: Month-wise prevalence of hepatic jaundice in cattle

S. No.	Month	No. Screened	No. Affected	Percent Cases	Per cent Prevalence	X ²
1	June	114	0	0	0	0.000**
2	July	243	29	56.86	11.93	
3	August	139	5	9.8	3.59	
4	September	128	4	7.84	3.13	
5	October	118	9	17.64	7.63	
6	November	82	4	7.84	4.87	
7	December	81	0	0	0	
8	January	83	0	0	0	
9	February	82	0	0	0	
10	March	81	0	0	0	
11	April	66	0	0	0	
12	May	108	0	0	0	
	Total	1325	51	100	3.84	

**Highly significant

Season-wise Prevalence

Season-wise prevalence of hepatic jaundice in cattle was recorded during monsoon (6.08%) and post-monsoon (6.5%) season. No case was recorded during summer and winter season. The effect of season on prevalence status was found to be significant ($P < 0.01$). In the present study most of the cases occurred during early months of monsoon i.e. July when greens were not available due to prolonged drought. Moreover, the new cases rarely developed when greens were abundantly available particularly during month of August. However, the animals could not get access to greens during September due to continuous rains. Therefore, the animals could have ingested the hepatotoxic and nephrotoxic plant *Lantana camara* that is easily available on the road side to satisfy their hunger. Similarly Sharma *et al.* (1981) and Bharadwaj *et al.* (2012) stated that scarcity of green fodder is common cause of lantana poisoning in sheep, goats, cattle and buffaloes. Sharma *et al.* (1979) reported cases of lantana poisoning throughout the year in Kangra district of Himachal Pradesh with peak incidence during summer months of April to June before the onset of rains when there is an acute scarcity of greens on the grazing range.

Conclusion

Hepatic jaundice, a rare disease of bovines, has been found to be prevalent in Nanded and Latur districts of Marathwada region of Maharashtra state. The study revealed the highest prevalence of hepatic jaundice in < 4 years old, Red Kandhari male cattle especially during monsoon and post-monsoon period with highest occurrence during month of July. Hence, in area with restriction of grazing high density of lantana shrubs is suggested to prevent the occurrence of hepatic jaundice in cattle.

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