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RETROSPECTIVE STUDY OF ANTHRAX OUTBREAKS AMONG ANIMALS IN RAMANATHAPURAM DISTRICT

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Abstract: Anthrax features as one of the top ten diseases reported in India and also as one of the major causes of death in livestock. Anthrax has been reported in eighteen states in India. The retrospective study of anthrax outbreak was taken from 2010 – 2015 among animals in Ramnathapuram district. During this period, five outbreaks were recorded in domestic animals and one in Deer. Among the domestic animals, four were cattle, five were ovine and one caprine species were died and they had unclotted blood from natural orifices, predominantly from nostrils. All cases were recorded during the months from September to February. The blood smears were taken and fixed in methanol. The smears were subjected to Gram's stain and polychrome methylene blue staining. The blood smears showed the presence of *Bacillus anthracis* organisms which appear as violet blue rods containing colorless, oval spores in Gram's staining and McFaydean reaction in polychrome methylene blue staining. The present study revealed the outbreak of Anthrax in goats and implies the risk of its zoonotic importance.
Keywords: Anthrax, Goats, McFaydean reaction, Zoonosis.

Introduction

Anthrax is an acute to peracute bacterial disease of domestic and wild mammals, to which susceptible to man also. Anthrax is primarily a disease of herbivores and features as one of the top ten diseases reported in India and also as one of the major causes of death in livestock. Anthrax has been reported in eighteen states in India. Most of the districts of Andhra Pradesh, few districts of Karnataka, Tamil Nadu, Kerala, Gujarat, West Bengal and Assam have been identified as very high anthrax pathozone (Rehman, 2012). The incidence of anthrax in animals and in man throughout India is not known accurately due to the fact that a large number of cases go unreported and only a fraction of human cases receive medical attention in a hospital (Lalitha and Kumar, 1996). In Tamil Nadu, anthrax outbreaks were recorded in 23 districts (DAH, Policy note 2015-16) and it was higher in Vellore,

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Thiruvannamalai and Kancheepuram districts (Gunaseelan et al., 2011). Most of the outbreaks were recorded in large ruminants in Tamil Nadu compared to small ruminants. This study reveals the existence of anthrax in small ruminants in Tamil Nadu.

Materials and Methods

During the period of 2010–2015, four cattle were died at Ramanathapuram block, five sheep and one goat was died at Thirupullani, Bogalur and Kadaladi blocks in Ramanathapuram district with suspicion of anthrax infection. Deer was found dead in forest area near Thiruvadanai block of this district. At necropsy, absence of rigor mortis was noticed and all were had unclotted, dark colored blood from natural orifices, predominantly in nostrils. Based on necropsy findings, postmortem was not conducted. Blood smears were prepared from carcasses and fixed with methanol. Smears were stained with Gram's stain and polychrome methylene blue stain. Unstained smears were sent to Animal Disease Intelligence Unit, Sivaganga for confirmation.

Results and Discussion

Examination of blood smears revealed that the presence of violet blue rods in single, pairs or in long chains containing colorless, oval spores in Gram's staining and shows the Mc Faydean reaction characterized by rods appears in blue surrounded by pink capsular materials in polychrome methylene blue staining (Carter and Wise, 2004). Necropsy findings in this study were concurred with the signs reported by Radostits *et al.*, (2006). Confirmation report also obtained from Animal Disease Intelligence Unit, Sivaganga. All outbreaks were recorded from the period of September to February. In India, Rehman (2012) stated that the anthrax epidemics have generally been reported between July to September and also in November and January, coinciding with the post monsoon months across the country. Consequence of these outbreaks, mass vaccination camp was initiated around the villages nearby outbreak areas and all domesticated ruminants were vaccinated completely with anthrax spore vaccines. Annual revaccination was carried out on outbreak areas for avert a future outbreaks. Chelsea *et al.,* (2008) suggested that annual revaccination against anthrax was recommended for all susceptible animals in the outbreak area for at least the next three years. Age also affects the susceptibility of anthrax; adults are generally more vulnerable than young and subadults (De Vos, 1990). Gunaseelan (2011) reported that the anthrax outbreaks were recorded in all districts of Tamil Nadu except Chennai and Ramanathapuram during 1991-2006. This study reveals the existence of anthrax infection in Ramanthapuram district which also has alkaline soil. Gunaseelan et al., (2011) reported that the presence of an

alkaline soil chemistry which assists in the survival of spores and hence being an "incubator area" for anthrax.

Ramanathapuram, a southern coastal district of Tamil Nadu has higher population of small ruminants especially sheep than large ruminants. Rearing of small ruminants was primary occupation of this district and their livelihood was mainly depends on these small ruminants only. So this present study revealed the existence of anthrax infection in small ruminants and should be strengthening the surveillance system in this district for controlling the further outbreaks.

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ANTHRAX ENDEMIC CHART IN RAMANATHAPURAM (FROM 2010 TO 2016)

S.No	Name of the Blocks	Villages	Species	Year	Month of outbreak
1	Ramanathapuram	Peravur	Bovine	2010	December
2	Thiruppullani	Panaikulam, Velamarichukatti, Theivasilai nallur	Ovine Caprine	2010	January
3	Thiruppullani	Mayakulam	Ovine	2010	January
4	Bogalur	Ariyakudipudhur	Ovine	2013	October
5	Kadaladi	Melakidaram	Ovine	2013	November
6	Thiruvadanai	Poonaikuttivayal	Cervicidae (Deer)	2014	September