

Brucellosis is a Challenge at Farm

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Abstract

Brucellosis is highly contagious disease affecting cattle and humans and present worldwide which causing the significant economic losses. Its prevalence is measured by many factors; diagnostic methods applied for identification are variables. This is about a case study of brucellosis reported at dairy farm; animals were diagnosed for the presence of brucellosis through screening of RBPT. Later on positive animals were confirmed through PCR and animal were treated who recovered after treatment.

It is conferred that pure bred animals, pregnancy and lactation plays important role in the prevalence of disease. It is need of time; specific preventive measures should be taken to prevent the disease.

Keywords: Brucellosis; Farm; Serological

Biology

Brucellosis is a significant communicable zoonotic disease-causing contagious infection of reproductive system in cattle with high frequency of morbidity and mortality and lifetime sterility in cattle. This is clinically characterized by abortion in last trimester, reduced in milk production whereas in human it causes undulating fever, general malaise, and arthritis. Its pathogenesis is not clear in human and animals. It may cause false positive with serological testing. Therefore, it is not recommended. RBPT (Rose Bengal Precipitation Test) is done through serological identification. Brucellosis has public health significance due to its complex nature. For high sensitivity and specify PCR is used for identification [1].

Brucellosis is a big hurdle in the developing countries for the production of livestock globally. It is caused by bacteria of genus *Brucella* which is a gram negative facultative intracellular organism [2,3].

Transmission

It is investigated that aborted fetus and uterine sections are significant source of infection in naïve animals. While it was transmitted vertically in calves through the milk. In human, milk is a probable source of infection, others are liver, fomites, and utensils are included. Clinically diagnosed infection through history in livestock.

Study area

The location of farm is Faisalabad which lies in rolling flat plains of Northeast Punjab, at 186 meters above the sea level. The district encompasses more than 16000 square meter kilometer area. The climate is hot and humid in most of the time of the year.

Study population

The population under study was cattle, having pure American Frisian breed.

Sample collection

The blood samples were collected and processed for PCR. It is reported that PCR showed positive result for Brucellosis.

This is transmitted by bacteria and belongs to genus *Brucella* and having six species. *Brucella abortus* is an intracellular organism which is present in cattle causing abortion at 3rd trimester. They easily enter into the body through abrasion, cuts, mucosa, sub mucosa, pharynx or conjunctiva. After getting entrance into the body this goes to reticuloendothelial cells *B. Canis*, *B. melletensis*, *B. Ovis*, *B. Abortus*, *B. suis*, *B. neomate*.

A case study is reported in the nearby region of Faisalabad, Punjab, Pakistan. This was a commercial dairy farm having approximately 100 cattle including pure bred and cross animals. Out of which 35 animals were on milking (Adult cows) while others were non pregnant heifers and bucklers calves. From 35 animals 25 were pregnant while 10 animals were dry non pregnant. Eight animals showed the signs of the termination of pregnancy. Remaining 17 animals were prophylactically given metronidazole. Thus, they did not get infection later on and status of pregnancy remains safe throughout the gestation.

History

All of sudden, there is reported that 8 cattle did abortion in lacunae of a week ago and forward. The DCC of animal were 150 days in 3 animals, 200 days in 1 animal, 120 days in 4 animals.

Clinical signs

Aborted fetus retained foetal membrane, reduction in intake of animals, loss in condition.

Vet Exam

TPR normal, physiologically animal hasn't sign of any systemic infection.

DX

Initially animals were tentatively Dx against Trichomoniasis. The reason is that some of the animal shows abortion up to 160 days of gestations.

Actually, this was mixed infection of Trichomoniasis and Brucellosis. For, the confirmation of Trichomoniasis animals were diag-

nosed by taking vaginal swab and cultured on Diamond plastrige's medium and some of the samples were processed to slide staining and confirmed under microscope through its typical signature identification.

Rx

Initial line of treatment was the use of metronidazole prophylactically 450ml intravenously per animal (@30 mg/kg of body weight). Results were excellent because not a single animal showed infection later on.

Unexpectedly there were not a single abortion in rearing animals has been reported. Animals were kept under observation for period of 15 days. The issue has been settled.

Molecular and serological diagnosis

For the confirmation and identification of the root cause the blood sample had been taken.

The vacutainers coated with EDTA has been used to collect the blood. By puncturing jugular vein of animal 4cc blood has been drawn. Meanwhile, placentomes and a piece of foetal membrane have also been collected to culture the bacteria in the lab.

The blood samples had been sent to UDL (university diagnostic lab) situated in university of veterinary sciences Lahore for PCR by adopting the random sampling technique.

Results

Upon PCR some animals were positive against Brucellosis

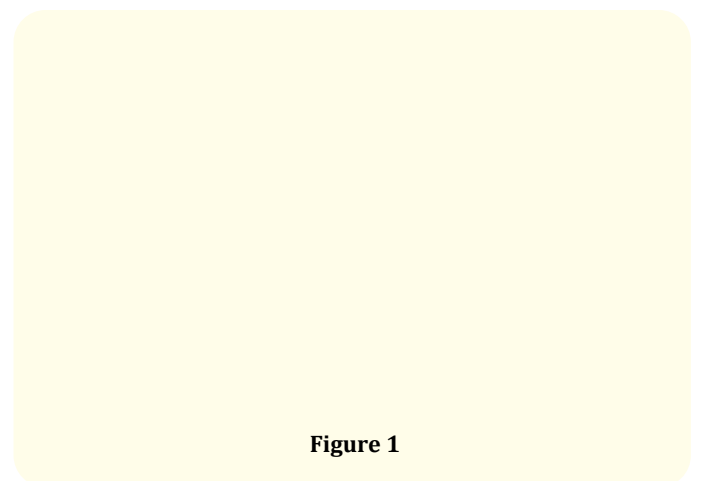


Figure 1

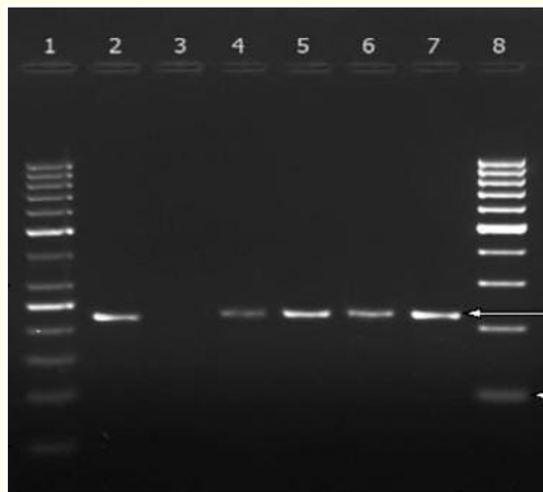


Figure 2

Differential diagnosis

Animals were screened through Rose Bengal precipitation test against brucellosis. There was no other animal showed positive.

Rx

Animal founded positive have been treated with following.

The treatment is followed for 7 days.

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
OTC	PPS	OTC	PPS	OTC	PPS	OTC
VESEL	VitAD3E	VESEL			VESEL	VitAD3E

Table 1

OTC: Oxy- Tetracycline @ 35 ml /Adult animal

PPS: Procaine Penicillin and Streptomycin @ 30 ml /Adult animal

VESEL: Selenium and Sodium Silicate @ 15 ml /Adult animal.

Prevention and public health significance

- Avoid natural mating at farm.
- Avoid contact with secretion of Brucellosis positive Bull. This has a zoonotic threat.
- It is recommended that brucellosis positive bull should be culled.
- Always follow the segregation of animals when newly animals are being purchased at farm for 14 days.

Conclusion

Brucellosis is serious threat to dairy sector in flourishing the commercial and corporate dairy growth. Risk factors are contributing to the spread of disease. Exotic breed are more prone to the infection than local breed. Natural mating with an infected bull is a primary cause of infection. Some other factor such as poor management and hygiene are also playing their role in the spread of Brucellosis.

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