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RESEARCH ARTICLE

Incidence of lumpy skin disease among Iraqi cattle in Waset Governorate, Iraq republic

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Abstract

Lumpy skin disease (LSD) is an economically devastating emerging viral disease of cattle. LSD is currently endemic in most of the Middle East region.The present study was conducted on 2906 cattle of different breed in Waset governorate in Iraq for a period extend from June-August 2014 . All suspected animals were clinically examined. Signs and symptoms included fever, depression, anorexia, excessive salivation, lacrimation, several days later nodules develop in the skin of muzzle, nares, back, legs, scrotum, perineum and udder, swelling of lymph nodules. About 10 days later the swelling nodules ruptured oozing fetid odor pus, joint affected in some animals causing recompancy of affected animals and making them an able to standing. The morbidity, mortality rates of LSD among examined Iraqi cattle were 8.6%, 2.8% respectively.

Confirmation of lumpy skin virus diagnosis by polymerase chain reaction test (PCR), 17 lymph nodes biopsy and 17 blood samples has been taken. Extraction of DNA by using mini kit (Qiagen, Stanford, CA) 15 positive results for blood and lymph nodes samples while only 4 negative samples (2 blood and 2 lymph nodes samples).

INTRODUCTION

Lumpy skin disease virus (LSDV), sheep pox virus (SPPV) and goat pox virus (GTPV) comprise the Capri poxvirus genus within the Poxviridae family (Buller et al., 2005). Sheep pox (SPP) and goat pox (GTP) are endemic in northern and central Africa and in large parts of Asia. Lumpy skin disease (LSD) occurs across Africa and has recently been aggressively spreading in the Middle East, despite excessive vaccination campaigns carried out in the region. The latest outbreaks of LSD were reported to the World Organization for Animal Health (OIE) Wahid database from Turkey and Iraq, raising concerns that the disease will continue to spread to Europe and Asia. All cattle breeds, ages and sexes are affected, although the disease is more severe in young animals and cows in the peak of lactation (Weiss, 1968)

Lumpy skin disease (LSD) is a pox disease of cattle and is characterised by fever, nodules on the skin, lesions in the mouth, pharynx and respiratory tract, emaciation, enlargedlymph nodes, oedema of the skin, and sometimes death (Carn& Kitching,1995;Davies et al. 1971; OIE 2010). The disease is one of the most important viral diseases of cattle, causing loss of condition in infected animals and permanent damage to hides. The most effective route of transmission is mechanical via biting flies. The incidence of LSD is high during wet seasons when populations of the flies are abundant; the incidence decreases or ceases during the dry season (Gari, et al. 2011; Gari, et al. 2012; Gari et al. 2010).

The disease is characterized by large skin nodules covering all parts of the body, fever, enlarged lymph nodes, nasal discharge and lachrymation, but the severity of clinical signs is highly variable (Davies 1991a). LSD causes significant economic losses due to permanent hide damage. Temporary or permanent infertility may occur in cows and bulls (Tuppurainen and Oura 2011). It leads to reduced milk yield and sometimes death due to secondary

bacterial infections (Chihota et al. 2003). In addition, it disrupts the trade in cattle and their products from LSD endemic countries (Babiuk et al. 2008). LSD was initially restricted to countries in sub-Saharan Africa, but from 1984 to 1988, there were unconfirmed reports of the disease in cattle in Oman and Kuwait (House et al. 1990; Kumar 2011). In 1988, it was confirmed in Egypt where it subsequently became enzootic (Ali et al. 1990; House et al. 1990; Davies 1991a). The virus then apparently spread by insect transmission from Egypt to Israel in 1989 (Davies 1991b), causing this disease to occur in a number of dairy herds, with a second outbreak occurring in dairy herds in 2006 (Brenner et al. 2006). In both outbreaks, the implementation of vaccination, strict quarantine measures and slaughter policies was successful in eradicating the disease (Davies 1991a; Yeruham et al. 1995; Brenner et al. 2006).

Materials & Methods

Investigation of lumpy skin disease in cattle in Waset province in Iraq, period of the study extend from June to August in year 2014.This area was endemic with LSD. Diagnosis of disease depend on clinical signs and symptoms related to LSD. Number of examinated cattle were 2906 Iraqi local breeds in different age and sex, from different cities in Waset province. Morbidity and mortality percentage of calculated.

Samples from affected animals send to central laboratory of veterinary department of agriculture ministry in Iraq republic for confirmation of virus by polymerase chain reaction test, samples includes 17 lymph nodes biopsies and 17 blood samples from different cities in province with EDTA. Samples collected under sterile conditions and sent in cooling environment.Extraction of DNA by using mini kit (Qiagen, Stanford, CA).

Results

Out of 2906 examined cow 249 exhibit signs and symptoms related to LSD. Clinical signs of LSD are specific rarely confused with other diseases. Examined animals showed the following signs and symptoms, fever, watery eyes, increased nasal secretions, loss of appetite, reduced milk production, depression and reluctance to move.

This is followed by the eruption of skin nodules that may cover the whole body. They can be found on any part of the body but are most numerous on the head and neck, perineum, genitalia and udder, and the limbs.

The nodules are 0.3-6 cm in diameter, slightly raised and extend and raised above the skin. Regional lymph nodes are enlarged and oedematous. Some of nodules ruptured and secondary infected with bacteria fetid odor pus exudate from them. Number of dead animals were 7 from 249 cow as in table number (1). Morbidity rate was 8.6% while mortality was 2.8%. polymerase chain reaction results obtained from central veterinary laboratory in agriculture ministry in Iraq confirms the virus of LSD, number of positive sample were 15 out from 17 in both lymph nodes biopsies and blood samples.

Table number 1 revealed city where animal rearing, examined cattle, diseased and dead cattle.

City	Number of exanimated cows	Numbers of diseased cows	Number of dead cows
Alkut	765	91	1
Alnumaneah	293	27	1
Alzubeadeah	770	72	2
Tajaldeen	178	16	2
Alazizeah	39	9	0
Almoefkeah	362	7	0
Alshehemeah	58	7	0
Aldeboni	140	4	1
Naheyatwaste	176	9	0
Alehrar	75	5	0
Alsewerah	50	2	0
Totel	2906	249	7

Discussion

The morbidity rate for LSD are ranges from 5 to 45%. However, the morbidity rates of 1 to 5 percent is considered more usual. Higher rates have been encountered in epizootics in Southern, West and East Africa and the Sudan although so far much lower rates may occur during the same epizootic. In addition, high morbidity and mortality rates 30-45 % and 12% respectively were also reported in Oman in 2009 in a farm population of Holstein

cattle(Sherrylin et al 2013). In previous studies in Iraq estimate morbidity rate 9.1% while mortality rate 0.5% among cattle in different cities including Nanawa and baghdad(OIE, 2013).
According to Davies (1991a) morbidity rates from 1-2% % may be contrasted with those of 80 to 90 % indifferent situations. Mortality rates of 10 to 40 %t andeven higher have been reported on occasion but the muchlower range of 1 to 5 % is more usual. However, as more recently reported, more severe disease is seen inBostaurus,particularly Channel Island breeds, than zebucattle. Calves and lactating cows tend to be mostsusceptible to disease (OIE, 2008;Tuppurainen, and Oura, 2012). Morbidity and mortality estimated in this study were 8.6% and 2.8% respectively which was in the range of previous Iraqi studies and regional also.
According to Carn (1995) LSD would be presumptivelydiagnosed based on case history and apparent clinical (OIE, 2010). A presumptive diagnosis of the disease can be madebased on clinical signs. However, mild and in apparent disease may be difficult to diagnose and rapidlaboratory methods are needed to confirm the diagnosis.The incubation period in infected animals varied from 4–5 days. The length of the viraemicperioddid not correlate with the severity of clinical disease. Viraemia was detected from 1–12 days usingvirus isolation and from 4–11 days using the PCR, which is longer than has previously been reported (Tuppurainen, Venter and Coetzer, 2005).
The disease affects cattle and tends to be more severe in milking cows in the peak of lactation and in young animals (Gariet al.,2011). In animals that develop clinical disease,there is a biphasic febrile reaction that may exceed 41°C. They remain febrile for 4 to 14 days. This is accompanied by depression, disinclination to move, inappetence, salivation, lachrymation and a nasal discharge, which may be mucoid or mucopurulent. Lachrymation may be followed by conjunctivitis and, in some cases, by corneal opacity and blindness. The superficial lymph nodes, especially prescapular, precrural and subparotid,are usually markedly enlarged(Thomas and Marè, 1945; Haig,1957; Weiss, 1968; Prozesky and Barnard, 1982; Barnard et al., 1994; Carn and Kitching, 1995)
Severe LSD is highly characteristic, but milder formscan be confused with: Pseudo lumpy skin disease (BovineHerpesvirus), Bovine papular stomatitis (Para poxvirus),
Pseudo cowpox (Para poxvirus), Vaccinia virus andCowpox virus (Orthopoxviruses) uncommon and notgeneralised infections, Dermatophilosis, Insect or tickbites, Besnoitiosis, Rinderpest, Demodicosis, Hypodermabovis infection, Photosensitisation, Urticaria, Cutaneoustuberculosis, Onchocercosis (Davies, 1991a; OIE, 2009;Siraw, 1987).
A presumptive diagnosis of the disease can be based on clinical signs, however, mild and inapparent cases may be difficult to be detected. Therefore laboratorymethods are needed to confirm diagnosis, which can be done either by isolation and identification of the virus, or by detection of antibody using serological tests (Tuppurainen et al., 2005). AS virus isolation is very difficult and time consuming we can use a rapid and sensitive test to confirm the diagnosis as PCR (Ireland and Binepal, 1998).

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