An epidemiological study of bovine mastitis and associated risk factors in and around Eltarf District, northeast Algeria

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Abstract

A cross-sectional study was undertaken to determine the prevalence of bovine mastitis, and to assess potential risk factors among lactating cows, both local and crossbreeds, in and around Eltarf town in northeast Algeria. A total of 324 lactating cows were included in the survey, examined for mastitis by clinical examination of the udder and teats and tested using the California Mastitis Test (CMT) to determine clinical and subclinical mastitis. Data was collected in a questionnaire during the farm visit. The overall prevalence was 41.66% (135/324), of which 9.80% (32/324) were clinical and 31.79% (103/324) subclinical cases. Out of 1296 quarters examined, the prevalence rate was 41.04% (532/1296), where 9.25% (120/1296) were clinical and 31.79% (412/1296) subclinical aspects of mastitis. Right Hind teats (RH) showed the highest rate of inflammation (51.54%), followed by the Left Hind (LH) teat in second place (44.44%), Right front quarter (RF; 36.11%) and lastly Left Front (LF; 32.09%). The relationships of risk factors with mastitis status were determined using Chi-square analysis, associations between mastitis and the independent variables, including parity and hygienic condition of the udder, teat and housing of cows were statistically significant ($P<0.05$) in the univariate analysis. Mastitis prevalence was significantly higher in cows having delivered four calves (87.50%) comparing to cows with less than four calves (28.16%), irrespective of lactation stage. Significantly higher mastitis prevalence was also observed in poor hygienic conditions (38.82%; $P<0.05$) than good hygienic condition (22.07%). Other risk factors such as breed, age, lactation stage, rearing system, housing system and tick control infestation did not differ significantly ($P>0.05$). This study indicated that mastitis is a prevalent disease and a serious problem across herds in and around the Eltarf district in Algeria. Further detailed epidemiological, microbiological, and economic analysis studies are required at the national level to tailor existing control and prevention strategies. Regular surveillance measures are recommended.

Key words: *Algeria; cows; mastitis; prevalence; risk factors*

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Introduction

Since independence, the agricultural economy has sought to achieve self-sufficiency. Milk production barely covers part of the population's needs. In fact, 2/3 of dairy products consumed come from imports (Yakhlef, 1989; Bencharif, 2001). Algeria ranks third in the world for the imports of milk and dairy products. In 2007, consumption demand for raw milk was estimated at 3.5 billion litres, while national milk production reached only 2.2 million litres (Boudedja, 2008).

Within the framework of the National Agricultural Development Program (PNDA), a milk production rehabilitation programme is being implemented. Within the programme, an epidemiological survey determined a very high udder infection rate (50.6%; MADR, 2002).

Mastitis (inflammation of the udder) is a complex disease of multi-factorial aetiology. Its occurrence depends on variables related to the animal, environmental and pathogen (Radostits et al., 2007). It is considered to be the most important disease of dairy animals, and has both zoonotic and economic impacts (Omore et al., 1996; Al-Majali et al., 2008). Mastitis is an imperative disease of bovines worldwide, causing large economics losses (Romero et al., 2018) through udder inflammation in lactating animals (Zenebe et al., 2014).

Mastitis can be defined as clinical mastitis (inflammation with visual signs in the udder or milk; CM) or subclinical mastitis (inflammation without visual signs; SCM). Both CM and SCM negatively impact milk quality and yield. It is therefore a major economic concern for the farmer. Clinical mastitis is also a potential concern from the animal welfare perspective (Lundberg, 2015).

Clinical mastitis can manifest as symptoms such as abnormal milk, udder swelling and systemic signs, including elevated temperature, lethargy and anorexia (Eriskine, 2001a). Subclinical mastitis is characterized by no visible appearance of changes in the milk or udder, though with a decline in milk production, modification of milk composition and the presence of bacteria in secretions (Eriskine, 2001b). Therefore, early detection of subclinical mastitis is not possible without continuous monitoring, making it more severe than clinical mastitis (Begum et al., 2015).

Clinical examination alone will not detect a large proportion of mastitis. The economic losses ensuring from decreased milk production are therefore difficult to estimate (Mihaela et al., 2009). Additionally, the bacterial contamination of milk from affected cows may render it unsuitable for human consumption due to zoonosis, food poisoning and antibiotic residue in the milk following mastitis (Radostits et al., 2007).

The disease has been reported in different parts of Algeria (Niar et al., 2000; Bouaziz et al., 2002; Rahal et al., 2009). However, in some areas, the disease is insufficiently investigated and information relating to its magnitude, distribution and risk factors are scarce. Such information is important to consider when designing appropriate strategies, and an udder health audit was implemented to identify all the risk factors that would help reduce its prevalence and effects.

The aim of this study was to detect the early onset of subclinical mastitis and estimate the prevalence of bovine mastitis, and to assess the major risk factors associated with the occurrence of bovine mastitis in northeast Algeria, an area renowned for its density of dairy cattle breeding. This information is required to avoid economic losses resulting from declines in milk production, reduced quality of dairy products, and repercussions to animal reproduction and longevity.

Materials and methods

Study area

The study was conducted on dairy farms in and around Eltarf town, 790 km northeast of Algiers. Average daily temperatures range from 11 °C in winter to 25 °C in summer. The lowest temperatures are recorded in January; the maximum in July and August. The average daily relative humidity varies between 71 and 79%, with a minimum between 43–53%, and maximum between 92–96%. The average rainfall recorded ranges from 600 to 800 mm/year.

The wet season lasts from September to May, representing 95% of the annual rainfall, which is variable and irregular along the coast. An average of 600 mm is recorded in the lower plains and 1200 mm in the mountains. In the southern part, this varies between 900 and 1500 mm. The winds have had a more or less constant speed since the Quaternary; during the cold season, north-westerly winds prevail, while in the hot season, the northeast winds blow, causing a significant sea breeze (Seltzer, 1946).

Study population

The sample size of lactating cows was 324 randomly selected (162 for each locality and crossbreeds) managed under extensive, semi-intensive and intensive farming systems. Cow attributes, breed (cross or local), age in years (young adult 3–5, adult 6–9, and old > 9 years), parity number (1–4), and stage of lactation months (early 1–3 month, mid 4–6 month, and late ≥7 month) were recorded.

Study design

A cross-sectional study was conducted from September 2018 to April 2019. All animals were examined visually for clinical mastitis by clinical and physical examination of the udder and milk, then tested for subclinical mastitis using the CMT (California Mastitis Test). Both clinical and subclinical mastitis prevalence was determined cross-sectionally, at the cow and quarter levels.

Data collection

The data collection format was prepared and used to record information regarding the potential intrinsic risk factors, such as breed, age, parity and stage of lactation. Animal age was determined and based on birth data, and categorised as young (3–5 years), young adults (6–9 years) and old (> 9 years). Parity number was categorized as cows with 1 calf, 2 calves, 3 calves or 4 calves. Final stage of lactation was categorized as early (1–3 month), mid (4–7 month) and late (> 7 month). Data was collected using a semi-structured questionnaire.

Information on extrinsic factors such as management system (extensive, intensive or semi-intensive), housing system (separate and together with other cows), tick control activity (yes or no) and udder, teat and housing hygiene (good or poor sanitation) were also collected.

Study methodology

Detection of mastitis

Disease identification made was based on clinical examination of the udder and teats of all lactating cows, the nature and appearance of milk secretions, and milk samples collected for the California mastitis test (CMT).

Clinical and physical inspection of the udder and milk

The udder was examined visually and then through palpation to detect possible fibrosis, inflammatory swelling, visible injury, tick infestation, tissue atrophy, and swelling of the supra udder lymph nodes. The size and consistency of udder quarters were inspected for the presence of abnormalities, such as asymmetry, swelling, firmness and blindness on the one hand, and consistency, odour, presence of any flakes, clots, pus, watery

Table 1. Prevalence of clinical and subclinical mastitis at the cow and udder quarter levels in dairy cows

Form of mastitis	Total examined cows	Total No. affected (%)	Total quarters examined	Total No. affected (%)
Clinical mastitis	324	32 (9.80%)	1296	120 (9.25%)
Subclinical mastitis	324	103 (31.79%)	1296	412 (31.79%)
Total	324	135 (41.66%)	1296	532 (41.04%)

appearance, blood or colour changes on the other. Mastitis with signs of systemic involvement was diagnosed as clinical mastitis (Radostits et al., 1994; Quinn et al., 1999). The udder was also inspected for the presence of ticks.

California mastitis test (CMT)

CMT was used to detect subclinical mastitis according to the procedure described by Quinn et al. (1999). After discarding the first three milking streams, two millilitres of milk from each udder quarter were milked into a plate with four separate cups. Three millilitres of commercial CMT reagent were added to each cup and mixed gently by rotating the plate for 15 s. The reaction was then visually scored depending upon the amount of gel formation, where no reaction is scored as negative, the appearance of streaks visible during plate rotation was scored as trace, distinct thickening during rotation but without gel scored as 1+, slight gel formation that slowly follows the rotating plate as 2+, and solid gel formation that adheres to the base of the plate as 3+.

Udder quarters that scored as negative or trace were considered healthy, while quarters with positive scores were considered infected. A positive cow was defined as having at least one quarter with a CMT score of +1.

Statistical analysis

Descriptive statistics were performed to summarize the prevalence of mastitis. Total prevalence was calculated by dividing the number of positive cows/quarters by the total number of cows/quarters examined.

The data were analysed by using STATA software version 7 (STAT, 2001). The effect of intrinsic risk factors such as breed, age, parity number and lactation stage, and extrinsic risk factor such as management system, housing system, tick control activity, udder, teat preparation and hygiene conditions with possible association of the disease was analysed using the chi-square test. Values were considered significant at $P<0.05$ in all analysis. The dependent variable of the model was cow mastitis status, while the risk factors, including intrinsic and extrinsic factors, where the explanatory variables.

Results

Prevalence of bovine mastitis

A total of 324 lactating cows was examined for the presence of mastitis. Of these, 32/324 (9.80%) were positive for clinical and 103/324 (31.79%) for subclinical mastitis based on the clinical examination of the udder and CMT, respectively.

A total 1296 quarters were examined at the quarter level, and 532 (41.04%) were affected. A higher prevalence of subclinical mastitis (31.79%) than clinical mastitis (9.25 %) was recorded (Table 1).

In light of the results shown in Table 2 for the quarter prevalence of clinical and subclinical mastitis, all teats were affected relatively equally and the overall quarter prevalence was 31.79% for subclinical and 9.25% for clinical mastitis.

For the quarter prevalence of subclinical mastitis, the right and left hind teats were most affected (39.81% and 33.33%, respectively) with subclinical mastitis. The right and left front teats had a lower prevalence rate (28.70% and 25.30%, respectively) (Table 2). The same result was obtained for cases of clinical mastitis, where inflammation rate was highest in the right hind (RH) and left hind (LH) teats (11.72% and 11.11%, respectively) followed by the right front (RF) and left front (LF) teats (7.40% and 6.79%, respectively) (Table 2).

Risk factors for mastitis

Intrinsic risk factors: the association between intrinsic risk factors and the occurrence of the mastitis in lactating dairy cows are shown in Table 3.

Table 2. Prevalence and distribution of clinical and subclinical mastitis across the four udder quarters in dairy cows

Quarter	Clinical mastitis		Subclinical mastitis	
	No. examined	Positive cases and prevalence (%)	No. examined	Positive cases and prevalence (%)
RF (%)	324	24 (7.40%)	324	93 (28.70%)
RH (%)	324	38 (11.72%)	324	129 (39.81%)
LF (%)	324	22 (6.79%)	324	82 (25.30%)
LH (%)	324	36 (11.11%)	324	108 (33.33%)
Total	1296	120 (9.25%)	1296	412 (31.79%)

No: Number RF: Right front RH: Right Hind LF: Left Front LH: Left Hind

Table 3. Association of potential risk factors with prevalence of mastitis at cow level

Risk factors	Category	Total number of animals examined	Number of animals Affected	Prevalence %	X^2	*P*- value
Breed	Cross	162	53	32.71%	1.5563	0.21221
	Local	162	47	29.01%		
Age	Young 3–5 years	234	72	30.76%	1.28532	0.52589
	Yong adults 6–9 years	25	10	40%		
	Old> 9 years	65	18	27.69%		
Parity Number	1 calf	284	80	28.16%	15.418073	0.00149
	2 calves	13	4	30.76%		
	3 calves	19	9	47.36%		
	4 calves	8	7	87.50%		
Lactation Stage	Early 1–3 months	97	24	24.74%	3.44623	0.17851
	Mid 4–7 months	100	30	30%		
	Late > 7 month	127	46	36.22%		

Analysis of intrinsic risk factor solicited higher udder inflammation rate in the cross breed (32.71%) than the local breed (29.01%). Mastitis prevalence was highest in late lactation (36.22%) and in the mid stages of lactation (30%) but lower in early lactation (24.74 %). In comparing prevalence by cow age, young adult cows (6- 9 years were most affected (40%), followed by young cows 3-5 years (30.76%). Old cows > 9 years were least affected (27.69%).

The prevalence of mastitis was significantly higher in cows with a higher number of calves (4; 87.50%) than in cows with fewer (1–3) calves, where cows with 1 calf had an infection rate of 28.16%, with 2 cows 28.16%, and 3 cows 47.36%. Parity was found to be significantly associated with mastitis (X^2=15.418073; P=0.00149; P<0.05).

However, intrinsic risk factors such as breed (X^2=1.5563; P=0.21221), age (X^2=1.28532 P=0.52589) and lactation stage (X^2=3.44623; P=0.17851) did not show a statistically significant association with the occurrence of mastitis.

The statistical analysis based on extrinsic risk factors as shown in Table 4, and management factors of farms such as management system, housing system, tick control activity and udder, teat and

Table 4. Prevalence of mastitis in lactating cows based on extrinsic risk factors

Risk factors	Category	Total number of animals examined	Number of animals affected	Prevalence %	X^2	*P*- value
Rearing system	Extensive	25	9	36%	0.334997	0.84578
	Semi-intensive	105	32	30.47%		
	Intensive	194	59	30.41%		
Housing system	Separately	93	27	29.03%	0.20515	0.65059
	Jointly	231	73	31.60%		
Tick control	Yes	67	18	26.86%	0.63289	0.426297
	No	257	82	31.90%		
Udder, teat and lodging hygiene	Good sanitation: washing, disinfection and drying udders and teats, straw and excrement changed daily, soil washing	154	34	22.07%	10.6186	0.00112
	Poor sanitation: no udder or teat washing and disinfection; straw litter changed every 3 days, soil washed every week	170	66	38.82%		

housing hygiene were evaluated and analysed. Based on management system, prevalence was 36%, 30.47% and 30.41% in extensive, semi-intensive and intensive breeding, respectively. (Table 4).

Statistical analysis showed no significant relationship between udder inflammation and management system (P>0.05). The prevalence of udder inflammation in cows jointly housed showed a high infection rate (31.60%) compared with cows housed separately (29.03%). The difference in prevalence of mastitis between cows housed separately and those jointly housed was not statically significant (X^2=0.20515; P=0.65059).

There was also no significant association between tick control activity and mastitis prevalence (X^2=0.63289, P=0.426297), though there was a higher prevalence of mastitis on farms where tick control is not implemented (31.90%, 82/257) than on farms where there tick control is implemented (26.86%; 18/67).

In contrary, there was a significant association between udder, teat, housing hygiene and mastitis. The higher udder inflammation rate of 38.82% (66/170) in cows with poor sanitation (no udder washing and straw litter not changed every 3 days and soil washed every week), than cows kept under good sanitation conditions (22.07%, 34/154) (X^2=10.6186; P=0.00112) (Table 4).

Discussion

The aim of the current study was to identify the prevalence and its potential risk factor assessment for bovine mastitis in dairy cows.

The present study showed an overall prevalence of mastitis in dairy cows of 41.66%, as determined by CMT and clinical examination of udders This finding (41.66%) is similar to other reports, listing prevalence of 34.5 to 53.33% in different parts of Algeria (Niar et al., 2000; Bouaziz et al., 2002; Bouzid et al., 2010). This result is higher that a report for central Algeria of 25.83% (Saidi et al., 2013). This finding is lower than reports for Tanzania (90.30%; Kvaria et al., 2004), Ethiopia (52.78%; Hunderra et al., 2005; 81.1%; Ararsa et al., 2014) and eastern Ethiopia (64.3%; Zeryehun and GeremaAbera, 2017), Nigeria (52%; Salihu al., 2011), and Malaysia (63.44%; Ariffin et al., 2019).

These differences can be explained due to geographical, environmental and agro-ecological differences, or by differences in farm management, husbandry systems, production systems, study methods or instruments used by the investigators. Furthermore, mastitis is a complex disease, involving interactions of animal risk factors and causative agents, and its prevalence varies (Radostits et al., 2007).

In this study, the prevalence of subclinical mastitis was higher (31.79%) than clinical mastitis (9.80%). This corroborates the general opinion that subclinical mastitis is 3 to 4 times more frequent than clinical mastitis (Radostits et al., 2007). Similar findings were reported elsewhere: 12% (CM) and 16% (SCM) in Ecuador (Said et al., 2018); 12.5% and 51.8% in eastern Ethiopia (Zeryehun and GeremaAbera, 2017); 7.8% and 73.3% (Ararsa et al., 2014) and 19.6% and 55.1% (Zeryehun et al., 2013) and 10.3% and 33.8% (Delelesse, 2010) in Ethiopia; and 15.1% and 29.7% in Algeria (Bouzid et al., 2011), for clinical and subclinical mastitis, respectively.

However, a higher prevalence in the range of 62.9%-95% has also been reported (Dego and TarekFisseha, 2003; Byarugaba et al., 2008; Bedada and HikoAdem, 2011). The overall quarter level prevalence found in this study (41.04 %) is in agreement with reports for central Ethiopia (35.25%; Mekbib et al., 2010) and Pakistan (44.9%; Bachaya et al., 2011) in Pakistan, but lower than reports

for Selale, Ethiopia (63.1%; Kifle and Tolossa, 2008) and Addis Ababa, Ethiopia (62.3%; Zeryehun et al., 2013).

The present finding is higher than the report a prevalence of 6% around Bishoftu town (Balachew, 2016), 27.57% in Germany (Fadlelmoula et al., 2007), and 10.12% in Doba District, East Hararge zone (Girma et al., 2012).

In the case of the prevalence of quarters there is always a predominance of subclinical mastitis over clinical mastitis, with prevalence rates of 31.79% and 9.25% respectively. Other studies have obtained similar results. Mekibib et al. (2010) reported an overall prevalence of 44.9% around Holeta Town, where 10% and 34.8% represent the prevalence of clinical and subclinical mastitis.

In this study, the relatively higher prevalence quarters in right hind and life hind agree with other reports (Sori et al., 2005; Zeryehun et al., 2013). However, the slightly higher prevalence in hind quarters in the present study is due to the high production capacity of the hind quarters (Radostitis and Blood, 1994), and a higher chance of faecal and environmental contamination (Sori et al., 2005).

In this study, there was no statistically significant association (P>0.05) between breed and mastitis. However, crossbreed cows were affected at relatively higher rate (32.71%) than local breeds (29.01%), which is in agreement with previous studies in Sudan (Madut et al., 2009), and in Ethiopia (Bitew et al., 2010; Bedacha and Mengistu, 2011). This is due to the anatomy of the teat and udder and certain physiological characteristics, such as fewer phagocytic cells in higher yielding cows associated to dilution in crossbreeds. It is also worthwhile mentioning that local breeds are more subjected to poor management conditions than crossbreeds.

In the present study, there was a relatively higher prevalence of mastitis observed in adult cows (40%) than young and old cows (30.76%, 27.69%). This is directly due to the large teats and more relaxed sphincter muscles that increase accessibility of the infectious agent into the cow udder (Radostitis et al., 2007). However, the differences between age groups were not statistically significant (P>0.05). This observation is corroborated by the report by Endale et al. (2016). This finding was explained by the contribution of better active mononuclear leukocyte function in primiparous cows than in multiparous cows (Jha et al., 2010).

The later lactation stage had a higher relative prevalence (36.22%) than the mid (30%) and early (24.74%) lactation stages, though the difference was not statistically significant (P>0.05), which is in disagreement with other reports (Mungube et al., 2005; Delelesses, 2010; Moges et al., 2011). With regard to information on the age and lactation stage, the lack of reality is due where large parts of cows on the farms were purchased.

The current study showed a statistically significant prevalence of mastitis with parity (X^2=15.418073; P=0.00149), with a higher rate of mastitis in cows with many calves (87.50%) than few calves (28.16%). This finding was in agreement with reports conducted in Ethiopia (Mekibib et al., 2010; Nibret et al., 2011; Belyaneh et al., 2014).

Similarly, increasing prevalence with advancing parity was reported by Madut et al. (2009), Bitew et al. (2010), and Girma et al. (2012). In the same profile, Jha et al. (2010) explained the contribution of improved diapedesis and active mononuclear leukocyte function in primiparous than in multiparous cows. Furthermore, production decreases with advancing parity and age, and cows become prone to infection.

The current study showed extrinsic risk factors were found to not be significantly associated with mastitis in

dairy cattle in the Eltarf region of Algeria, including management system, housing system, and tick control activity (Table 4).

The prevalence of mastitis was not significantly associated with differences in management system, though prevalence was higher in extensive farming systems (36%) than in semi-intensive (30.47%) and intensive (30.41%) farming systems. These findings are in disagreement with a study in Tanzania (Kivaria et al., 2006) and by Abera et al. (2010), who found that mastitis prevalence was significantly associated with management system.

There was no statistically significant association (P>0.05) between housing systems and mastitis incidence. In line with this, Tolera and Cibsa Dame, (2019) also reported a lack of a significant association between mastitis prevalence and housing systems in the Abuna Gindeberet District in Ethiopia. On the contrary, Oliver et al. (2004) found that mastitis was associated with housing systems in Tennessee, USA.

Tick control infestation of the udder was not significantly associated with mastitis prevalence (X^2=0.63289; P=0.426297). Cows with no tick control of the udder were affected at a relatively higher rate (31.90%) than those with tick control of the udder (26.86%). In agreement with the results of this study, Tolera and Cibsa Dame, (2019) showed that tick control measures of the udder were not statistically significant, though this is in disagreement with the reports of Biffa et al. (2005), Almaw et al. (2008) and Abera et al. (2010).

In this study, there was a significant association between udder, teat and houses hygiene with the rate of mastitis prevalence (P<0.05). Cows raised on farms with poor hygiene conditions (no udder or teat washing and disinfection; straw litter changed every 3 days, soil washed every week) had a higher prevalence (38.82%) than those on farms with relatively better hygiene (washing, disinfection and drying udder and teat, litter changed daily with soil washing). The poor hygiene in cow housing areas suggests the prevailing lack of attention to udder management.

The observed shortcomings in management practices and milking hygiene also foster rapid within-herd multiplication, spread and maintenance of both environmental and contagious mastitis pathogens. Radostitis et al. (2007) documented that udder preparation both before and after milking influenced the rate of mastitis.

On other hand, the presence and accumulation of discarded faecal matter and litter as observed in our study represent a source of contamination, proliferation and transmission of mastitis, as udders and milking equipment are in contact with soil and faeces. Other studies have also reported that infection is correlated with hygienic shortcomings, management practices and milking (Quinn et al., 2002; Biffa et al., 2005; Kivaria et al., 2006; Tolera and Cibsa Dame, 2019). Consequently, dairy cows are housed under suboptimal hygiene conditions. Suboptimal housing hygiene has been associated with high incidences of clinical mastitis (Radostits et al., 2000; Radostits, 2001).

Conclusions

The overall prevalence of mastitis was high at the cow level (41.66%) and at the quarter level (41.04%), with a predominance of subclinical mastitis. This indicates that mastitis is a prevalent disease and a serious problem across herds. Furthermore, it was observed that parity number, udder, teat and housing hygiene are potential risk factors.

Based on the results found in this study, it is likely that the high prevalence of mastitis is a result of poor hygiene, and udder and teat condition. Clearly, most mastitis cases were largely of

environmental origin; accordingly, proper mastitis control should be practised though appropriate cow environment and udder health management programmes. Future research should focus on the risk factors associated with mastitis prevalence control options on the farm. Further detailed epidemiological, microbiological, and economic analysis studies are required at the national level to better shape the existing control and prevention strategies.

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Epidemiološko istraživanje mastitisa u goveda i povezanih faktora rizika u okolici i gradu Eltarf u sjeveroistočnom Alžiru

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Istraživanje je provedeno da bi se ustvrdila prevalencija i procijenili potencijalni čimbenici rizika za mastitis u krava u laktaciji u gradu Eltarf i njegovoj okolici, u sjeveroistočnom Alžiru u križanih i lokalnih pasmina krava. Tri stotine i dvadeset četiri krava u laktaciji bile su uključeno u istraživanje mastitisa kliničkim pregledom vimena i sisa i testirano uporabom kalifornijskog mastitis testa (CMT) kako bi se ustvrdio klinički i supklinički oblik mastitisa. Anketa za prikupljanje podataka prikupljena je tijekom posjete farmi. Ukupni postotak prevalencije na razini krave iznosio je 41,66 % (135/324), od čega su 9,80 % (32/324) bili klinički i 31,79 % (103/324) supklinički oblici mastiitisa. Od ukupno 1296 pregledanih četvrti, postotak prevalencije iznosio je 41,04 % (532/1296), od čega su 9,25 % (120/1296) bili klinički, a 31,79 % (412/1296) supklinički oblici mastitisa. Najveći postotak infekcije (51,54 %) zabilježen je u desnoj stražnjoj četvrti vimena (RH), zatim u lijevoj zadnjoj četvrti (LH) (44,44 %), potom u prednjoj desnoj četvrti (RF) (36,11 %), a najmanji postotak infekcije je zabilježen u lijevoj prednjoj četvrti vimena (LF) (32,09 %). Povezanost čimbenika rizika s pojavnosti mastitisa ustvrđena je primjenom Chi-kvadrat analize, povezanosti između neovisne varijable, uključujući paritet i higijensko stanje vimena i sisa te smještaja krava s mastitisom, bili su statistički značajni (P<0,05) u univarijantnoj analizi. Prevalencija mastitisa bila je značajno veća u krava koje su imale 4 teleta (87,50 %) u usporedbi s kravama s manje od 4 teleta (28,16 %), bez obzira na stadij laktacije. Povrh toga, opažena je znatno veća prevalencija mastitisa u krava držanih u lošijim (38,82 %; P<0,05) u odnosu na krave držane u dobrim zoohigijenskim uvjetima (22,07 %). Ostali čimbenici rizika poput: pasmine, dobi, faze laktacije, sustava uzgoja i držanja i invazije krpeljima nisu imali statističku značajnost na pojavnost mastitisa (P>0,05). Ova studija pokazala je da je mastitis rasprostranjena bolest i ozbiljan problem u mnogim stada u gradu Eltarf i njegovoj okolici u sjeveroistočnom Alžiru. Nužne su daljnje detaljne epidemiološke, mikrobiološke i ekonomske analize na razini cijele države da bi se prilagodila postojeća strategija kontrole i prevencije mastitisa te se preporučuju redovite mjere njegovog nadzora.

Ključne riječi: *Alžir, krave, mastitis, prevalencija, čimbenici rizika*