Regional Assiut Veterinary Laboratory.
Director Prof. Dr. S.M. Nashed.

SOME STUDIES ON THE MOST IMPORTENT PATHOLOGICAL AFFECTION OF THE MAMMARY GLAND OF SLAUGHTERED CATTLE IN ASSIUT GOVERNORATE

(With One Table & 4 Fig.)

By

SEHAM M. ALY & A. NAFADY*

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دراسه عن أهم العلل الباثولوجيه فى ضرع الابقار المذبوحه فى محافظة أسيوط

سهـــام علـى ، عزام نفـــادى

تم فحص ٣٠ عينه من ضرع الأبقار المذبوحه بكتريولوجياً وباثولوجياً وأثبت الفحص الباثولوجى وجود الصوره الحاده والمزمنه من التهاب الضرع وأمكن عزل عدد من الميكروبات البكتريه مثل الميكروب العنقودى الذهبى ، الكلبسيلا اورجينس والميكروب القولونى والبرونيس فولجاريز ، والانتراكويد والستروباكتر والميكروب السبحى وهذه الميكروبات لها علاقه بالصوره الباثولوجيه .

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*: Dept. of Pathology, Fac. Vet. Med., Assiut Univ.

SUMMARY

A total of 30 samples from udder tissue of cattle were examined bacteriologically and histopathologically. The results of pathological examination showed acute and chronic forms of lesions. Some organisms were isolated including *Staph aureus, Klebsiella aerogenes, E. coli, Proteus vulgaries, Anthracoid, Citro bacter sp. and Strept agalactiae.* It seems that these organisms were related with the picture of pathoglogy.

Keywords: Some studies, Pathological affections, mammary gland Cattle, Assiut Egypt.

INTRODUCTION

Mastitis has been still implicated as one of the major disease problems in dairy industry. It is a descriptive term indicating diverse abnormal change in mammary gland characterised by tissue changes producing abnormalities in the secretory product of the gland.

Mastitis is of a great economic importance in farm animals. The disease remains one of the most important cause of tremendous loss in milk yield in many countries.

BANSAL et al. *(1990)* studied that the most common cause of clinical mastitis were *Staphylococcus aureus* and *Streptococcus agalactiae* in buffaloes; Coryne bacterium and proteus spp. were isolaed from cows. *HASHIM* et al. *(1990)*, isolated *Streptococci spp.* from bovine udder. This study was animed designed to correlate the micro morphological finding in the mammary gland and supramammary lymphnode with some of the isolated organism from this tissue.

MATERIAL and METHODS

A total of 30 samples from udder of cattle were collected from Assiut slaughter house, where animals are recieved from various parts of the adjacent localities. Pre-mortem examination of these animals showed the presence of clinical signs of mastitis. Samples of udder tissue were taken from animals of different ages.

Handling of specimens:

Double tissue samples were collected from the mammary gland and related lymph node. The first sample placed in a

seperate sterile labelled polyethylene bags under aseptic conditions and transported to laboratory for bacteriological investigation. The second samples were fixed in 10% neutral buffer formalin for histopathological examination. Post fixation samples were washed in water, treated with ascending grades of ethyl alcohol, cleared in methyl benzoate and furtherly embeded and blocked in parafin. A sections of 5 Mu thickness was obtained on microtome, stained with H & E. after *ANN PREECE (1965)* then examined by light microscope.

Bacteriological examination was carried out firstly by sterilizing the surface of the udder tissue using hot scalpel, then open with sterile scalpel. A loopful from the inside of the tissue was inoculated on the blood agar, macConkey's agar plates and inoculated in nutrient broth tubes. All media were incubated at 37°C for 24 hours. From incubated broth, blood agar as well as MacConkey's plates were inoculated. The isolated colonies were picked up and subjected to further identification, based on the colonial and cellular morphology and biochemical reaction according to *CRUICKCHANK* et al., *1975 and GIBBONS, 1975).*

RESULTS

Results of bacteriological examination were illustrated in Table 1. **Pathological studies**

Histopathological examination revealed that pathological lesions in mammary gland were of two types.

The first type of lesions, was found in 15 cases, where the reaction was of acute catarrhal type, in which the lining epithelium showed necrobiotic changes. This necrobiotic changes of the epithelium varies from degeneration to complete destruction and desquamation of this epithelium. Inflammatory cellular reaction consisted of neutrophils and macrophages. The interacinar and interlobular stroma showed prominent vascular hyperaemia, and inflammatory cellular infiltration (Fig. 1).

The lymph nodes of this group showed a prominent depletation of lymphoid elements (Fig. 2). *Staph, Strept, E.coli and Klebsilla* were isolated from this group.

The second type of lesions was found in 11 cases; where the reaction was of chronic type. The inflammatory process was prominent in the interstitial tissue. The changes consisted of fibroblastic proliferation as well as lymphocytic and macrophage infiltration in both inter and intra lobular stroma. Most of the mammary acini were obliterated and their epithlium became flattened. Basophilic lamellated masses of calcium in the lumen of some acini could be observed. Most of the duct

system of the lobules showed a papillary projection into the lumen (Fig. 3). Also some of the lactiferous ducts showed cystic dilatation in association with epithelial metaplasia.

The supramammary lymph nodes of this group showed hyperplasia of the lymphoid element (Fig. 4). *Staph aureus, Streptococci, E.coli*, were isolated from some cases.

Table 1: Bacterial isolates from the udder of cattle

Bacterial isolate	No. of Cases. Total	Incidence
Single isolate.	15	50%
Staph aureus	6	20%
Klebsiella aerogenes	4	13.3%
E.coli	4	13.3%
Anthracoid	1	3.3%
Negative result:	6	20%
Mixed isolate:	9	30%
Staph + Klebsiella	2	6.7%
Staph + Klebsiella + Proteus	1	3.3%
Staph + Klebsiella + E.coli	1	3.3%
Staph + E. coli	1	3.3%
Staph + Proteus	1	3.3%
Strept + E. coli	1	3.3%
Anthracoid + Proteus	1	3.3%
Anthracoid + Citrobacter	1	3.3%

DISCUSSION

In this study *Staph aureus, Klebsellia aerogenosa, E. coli, Proteus vulgaris, Anthracoid, Citrobactes sp.* and *Streptococcus agalactia* were isolated from cases with clinical mastitis. These results were inagreement with *BANSAL et al. (1990); HASHIN et al. (1990); KASTRZYNSKI and KOZANECKI (1990); MILOJEVIC (1990); RAMACHANDRAIAH et al. (1990); MESSADI et al. (1991) and MALINOWSKI et al. (1992).*

Histopathological changes observed in clinical cases of mastitis used in this investigation were grouped into two categories. In the first group, the reaction of the mammary tissue to the pathogenic agent was of acute catarrhal nature, with prominent alteration in the lining epithelium of both acini and duct system. These ulterations were represented by desquamative catarrh, neutrophils and macrophage infiltration, (Acute catarrhal mastitis).

This changes together with severe lymphoid exhustion observed in the supramammary lymph node point to the severity and the virulance of the microorganisms isolated from these cases *(Staph aureus, Strep. agalactiae, E.coli and Klebsilla)* or / and the high susceptability of the mammary tissue to such organisms.

A similar results were obtaind by *JUBB* et al. *(1985) and ANDERSON (1982),* who recorded that *Staphylococcus mastitis* could be of preacute, acute or chronic type. On the other hand *JONES (1990)* reported that *E.coli,* was associated with acute catarrhal form of mastitis.

In the second catogries the reaction of the mammary tissue were of chronic nature and characterized by fibroplasia, destruction of the mammary acini as well as, lymphocytic, macrophage and plasma cell infiltration of chronic interstitial mastitis. Hyperplasia of the epithelium lining of duct was a feature. Cystic dilation of lactiferous duct was commonly observed as compansatory changes. Metaplastic changes of the epithelium of these duct might be due to chronic infections. Hyperplasia, metaplasia and fibroplasia observed in the mammary tissue and supramammary lymph nodes point to chronic nature of the infection. These pathological change were associated with the presence of *Staph aureus, Streptococcus agalactia and E.coli* isolated from these cases. Similar result were obtained by *ANDERSON (1982), JUBB* et al. *(1985)* and *HUNGERFORD (1989).*

Higher incidence of mastitis was observed among slaughtered cattle in Assiut Governorate, of these cases about 80% were positive on bacteriological examination. *Staph aureus gains* the upper hand among all infection as it was isolated from about 40% of cases. However citrobacter and streptococcus agalactia were of lower incidence as it was isolated from only 3.3% of cases. Cases with mixed infection occupied an intermediate position. Our result was inagreement with *BANSAL* et al. *(1990); KASTRZYNSKI and KOZANECKI (1990); MILOJEVIC (1990); RAMACHANDRAIH* et al. *(1990) and MESSADI* et al. *(1991),* who stated that *Staphylococcus aureus* was the most common etiological agent of mastitis.

From our study we can conclude that pathological affection of the mammary tissue were wide spread. Among these affections acute and chronic form of mastitis were investigated. Microorganisms *(Staph aureus, Klebsiella aerogenes, E. Coli, Proteus vulgar)* were isolated from these cases.

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Fig. 1: Showed that the inter acinar and inter lobular stroma showed prominent vascular hyperaemia, oedema and inflammatory cell H&E x16

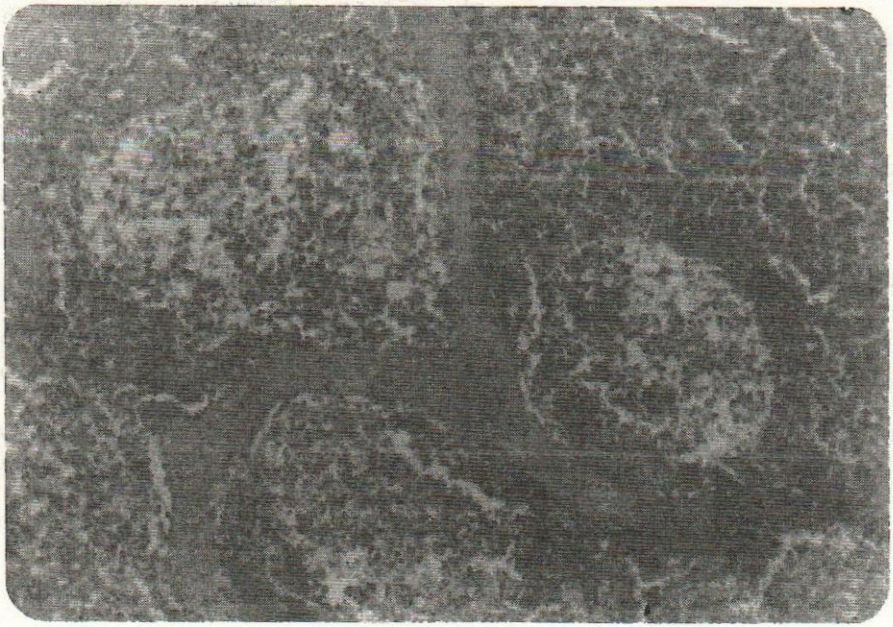

Fig. 2: Showed that the lymph node of this group showed a prominent depletation of th lymphoid element of lymph follicules H&E x25

Fig. 3: Most of the duct system of lobules showed a papillery projection into the lumen H&E x 6.3.

Fig. 4: The mammary lymphnode of these group showed hyperplasia of the lympoid element H&E x25.