PATHOLOGICAL ASPECTS AND ZOOHYGIENIC IMPLICATIONS OF ZOONOTIC POTENTIAL LESIONS IN CATTLE SLAUGHTERED IN VASLUI COUNTY (2025)

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Abstract

The paper aims to conduct a preliminary analysis of macroanatomical lesions with diagnostic and zoonotic significance, observed in cattle slaughtered in 2025 at the SC VASCAR SA Slaughterhouse in Vaslui. Post-mortem examination revealed 73 lesions in 38 carcasses, with the most frequently affected organs being the liver, lungs, and lymph nodes. The lesions included dystrophies, congestions, hypertrophies, and hydatid cysts, some of which have notable zoonotic implications. A significant proportion of the animals originated from non-professional households, where welfare and hygiene conditions fall short of the standards observed in commercial farms. The lesion typology suggests a correlation between zoo-hygienic deficiencies and the development of chronic pathological changes. The results emphasize the importance of assessing the health status of animals prior to slaughter in order to mitigate risks to food safety and public health.

Key words: *bovine, macroscopic lesions, animal welfare, non-professional households, zoonotic risk*

INTRODUCTION

Post-mortem examination of cattle represents an essential tool for assessing the health status, welfare, and zoo-hygienic conditions under which the animals lived prior to slaughter [1,2].

Pathological lesions detected in internal organs - hepatic, pulmonary, renal, or lymphatic - may result from chronic conditions, parasitic infestations [3–5], or substandard husbandry practices [6,7].

In Romania, a significant proportion of slaughtered cattle originates from non-professional households, where hygiene, microclimate, stocking density, and sanitary measures often fall below the standards required for authorized commercial farms [3,4,8].

National and European legislation (ANSVSA Order No. 35/2016) mandates adherence to the "Five Freedoms" principle (freedom from hunger and thirst, discomfort, pain, fear, and the freedom to express normal behavior), which are fundamental to ensuring proper zoo-hygiene [9].

International studies reflect similar concerns:

- hydatidosis, identified in over 10% of cattle examined post-mortem in various regions, is an example of a zoonotic parasitosis associated with poor sanitary conditions [5,10,11].
- welfare indicators based on behavioral, physical, and physiological aspects are used to evaluate hygiene and stress levels in cattle [6,12].

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- studies examining the relationship between biosecurity, animal welfare, and economic performance - including at the level of small-scale farms - confirm the decisive role of hygiene in animal health [7,13].

This descriptive study is based on the examination of cattle slaughtered in 2025 at the SC VASCAR SA Slaughterhouse in Vaslui, most of which originated from non-professional households.

The study has two main objectives: (i) to describe the principal macroanatomical lesions - in the liver, lungs, kidneys, spleen, and lymph nodes - with zoonotic potential, and (ii) to evaluate the impact of zoo-hygienic factors (welfare, hygiene, stocking density, transport) on the occurrence of these lesions.

The work aims to contribute to the strengthening of veterinary public health surveillance, the reduction of zoonotic risks, and the promotion of hygiene and animal welfare in slaughter livestock.

MATERIAL AND METHOD

The study was conducted between January and May 2025 at the SC VASCAR SA Slaughterhouse in Vaslui municipality, Vaslui County, a facility authorized under veterinary health regulations in accordance with Regulation (EC) No. 853/2004 and applicable national legislation.

The evaluation was performed on 38 bovine carcasses slaughtered at the facility, selected following the identification of evident pathological changes during post-mortem inspection by the official veterinarian, in compliance with the provisions of ANSVSA Order No. 35/2016 regarding post-mortem inspection in slaughterhouses.

The examined animals originated primarily from individual, non-professional rural households and were delivered to the slaughterhouse as part of scheduled processing. The conditions of transport, maintenance, and care prior to slaughter varied significantly and were often below the standards stipulated by animal welfare legislation, including ANSVSA Order No. 67/2009 concerning the protection of animals during transport.

The post-mortem examination was carried out following the procedures established in the Veterinary Sanitary Inspection Manual issued by ANSVSA. It included visual inspection, palpation, and incision of internal organs - liver, lungs, lymph nodes, kidneys, and spleen. Lesions were described based on changes in color, consistency, morphological appearance, and the presence of abnormal formations. Observations were photographically documented, and representative cases were selected for descriptive analysis of organic alterations.

In total, 73 individual lesions were recorded across the 38 carcasses examined, with some animals exhibiting multiple organ involvement. No histopathological or microbiological investigations were carried out, as the study was observational in nature, aiming to highlight the main types of macroscopic lesions found in carcasses originating from individual households and their possible association with deficiencies in welfare and hygiene at the source farms.

RESULTS

Between January and May 2025, a total of 38 bovine carcasses were subjected to post-mortem sanitary inspection at the SC VASCAR SA slaughterhouse in Vaslui municipality.

A total of 73 distinct macroanatomical lesions were recorded, as several animals exhibited multiple pathological changes across different organs.

The liver was the most frequently affected organ (25 cases, 65.8%), followed by the lungs (17 cases, 44.7%) and lymph nodes (15 cases, 39.4%). Additional lesions were identified in the kidneys (9 cases, 23.6%) and spleen (7 cases, 18.4%).

Table 1. Distribution of macroanatomical lesions by organ (73 lesions, 38 carcasses)

Affected Organ	*Number of Cases*	*Percentage of Total (38)*	*Types of Observed Lesions*
Liver	25	65.8%	Chronic congestion, dystrophy, nutritional liver, hydatid cysts
Lungs	17	44.7%	Congestion, edema, granulomas, hydatid cysts
Lymph nodes	15	39.4%	Hyperplasia, caseification, induration
Kidneys	9	23.6%	Dystrophies, atrophies, infarcts
Spleen	7	18.4%	Lymphoid hypertrophy, increased consistency

Hepatic lesions were characterized by discoloration (pale or congested liver), friable consistency, rounded edges, and the presence of hydatid cysts.

Pulmonary lesions included congestion, edema, granulomatous nodules, and hydatid cysts measuring between 1 and 4 cm in diameter. Affected lymph nodes exhibited hypertrophy, induration, or caseous consistency. Renal lesions involved dystrophies, infarctions, and cortical atrophy, while the spleen showed lymphoid hypertrophy and increased firmness.

All lesions were photographically documented. Of these, six cases presented hepatic hydatid cysts (Fig. 1), and five showed pulmonary cysts (Fig. 2).

Fig. 1 Bovine.
Hepatic hydatid cysts.

Fig. 2 Bovine.
Pulmonary hydatidosis.

In four cases, lymph nodes exhibited changes suggestive of tuberculosis (Fig. 3, Fig. 4., Fig. 5). Chronic pathological features predominated across all described lesions.

Fig. 3 Bovine.
Granulomatous lymph node on section.

Fig. 4 Bovine.
Tuberculous granulomas of varying sizes on the parietal pleura .

Fig. 5 Bovine.
Pulmonary localization of tuberculosis.

At necropsy of a six-year-old cow, severe hepatic lesions consistent with chronic fasciolosis were observed. The liver was enlarged (hepatomegaly), with parenchyma extensively altered by the migration tracts of the parasite *Fasciola hepatica*. The bile ducts were thickened, prominent, whitish in appearance, with some areas showing calcification, and the gallbladder was distended (Fig. 6). Upon sectioning, numerous adult parasites were observed within a greenish, foul-smelling content. The described changes indicated a heavy infestation with significant impact on liver function.

Fig. 6 Bovine.
Liver - heavy infestation with flukes at various developmental stages.

DISCUSSIONS

The results obtained in this study indicate a high prevalence of chronic and parasitic lesions in cattle originating from non-professional households and slaughtered at the Vaslui abattoir.

The liver, lungs, and lymph nodes were the most frequently affected organs, suggesting a systemic context of prolonged exposure to zoo-hygienic, parasitological, and nutritional risk factors. The identified

lesions - including hepatic dystrophies, nutritional liver degeneration, pulmonary congestion, hydatid cysts, lymph node hypertrophy, and renal infarctions - are consistent with findings from other studies investigating the impact of suboptimal rearing conditions on the organic health of ruminants [3,5,8].

The presence of hydatid cysts in the liver and lungs confirms exposure to *Echinococcus granulosus*, a zoonotic parasite that persists in environments with poor hygiene and lack of control over guard dogs in rural households [2,6]. The prevalence of these parasitic formations in two of the body's primary filtering organs points to an active cycle of contamination, exacerbated by the absence of deworming and basic hygiene practices. According to the literature, hydatidosis is endemic in many rural areas of Romania, and its detection at slaughterhouses may serve as an indirect indicator of veterinary hygiene standards at the source farms [7,11].

Congestive and granulomatous pulmonary lesions are often associated with chronic respiratory infections or parasitic diseases such as dictyocaulosis, particularly under conditions of thermal stress, high humidity, or inadequate microclimate in shelters [1,4]. In our study, the edematous appearance and presence of pulmonary granulomas suggest slow-developing, untreated conditions that compromised respiratory function. This is typical of small-scale farms, where the lack of regular veterinary intervention allows insidious, subclinical pathologies to establish.

Lymph node alterations - particularly those with caseous consistency - may raise suspicion of infection with *Mycobacterium bovis,* especially in the absence of differential diagnostic confirmation. Although no bacteriological confirmation was performed in the present study, the morphological appearance is consistent with the chronic form of tuberculosis, a situation also reported by other authors in regions where periodic testing is inconsistent [9,10,13].

In the context of limited traceability, the presence of such lesions in slaughtered carcasses has direct implications for food safety and underscores the need to strengthen epidemiological surveillance and control measures.

Renal and splenic lesions further completed the pattern of chronic pathological findings, suggesting an impaired biological background—typical of aged, poorly maintained animals or those exposed to metabolic or toxic diseases in the absence of proper diagnosis and treatment.

Such lesions are not isolated events but rather reflect a cumulative outcome of zoo-hygienic, nutritional, and veterinary care deficiencies.

Overall, the significant presence of chronic and parasitic lesions in animals originating from non-professional households highlights the critical importance of ensuring minimum standards for animal welfare and veterinary oversight.

The principles of the "Five Freedoms" - continuous access to water, adequate nutrition, physical comfort, protection from pain, and the freedom to express normal behavior - are difficult to achieve in unsupervised extensive systems [8,12].

This underscores the essential role of local veterinarians in educating livestock owners, implementing prophylactic programs, and promoting good hygiene and husbandry practices.

CONCLUSIONS

The study conducted at the Vaslui slaughterhouse on 38 bovine carcasses originating from non-professional households revealed a high prevalence of chronic and parasitic lesions, particularly affecting the liver, lungs, and lymph nodes.

Most of these lesions are consistent with prolonged exposure to stressors, nutritional deficiencies, lack of deworming, and absence of veterinary supervision.

The presence of hydatid cysts and lesions suggestive of tuberculosis raises serious concerns regarding zoonotic risks and emphasizes the need to strengthen control measures in individual farming operations.

The identified lesions reflect an overall compromised health status, with direct implications for meat quality and the safety of the food chain.

These findings underscore the importance of adhering to animal welfare standards and consistently applying hygiene and prophylactic measures in rural households.

The role of the veterinarian in monitoring animal health, educating livestock owners, and enforcing sanitary-veterinary control is essential for reducing pathological risks and protecting public health.

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