

## Swine erysipelas, clinical diagnosis and medical management: cases in farm near the city of Lubumbashi

Bonheur kumwimba <sup>1,\*</sup>, Hyacinthe nyandwe <sup>2</sup> and Arthur ngulu nsasi <sup>3</sup>

<sup>1</sup> Assistant, Basic sciences, University of Lubumbashi, Lubumbashi, Haut-Katanga, DRC

<sup>2</sup> Assistant, Clinics, University of Lubumbashi, Lubumbashi, Haut-Katanga, DRC

<sup>3</sup> Professor, Preclinics, University of Lubumbashi, Lubumbashi, Haut-Katanga, DRC

World Journal of Advanced Research and Reviews, 2021, 12(03), 329–333

Publication history: Received on 25 August 2021; revised on 19 October 2021; accepted on 21 October 2021

Article DOI: <https://doi.org/10.30574/wjarr.2021.12.3.0491>

### Abstract

The general objective of our work was to diagnose swine erysipelas, treat infected pigs and determine the prevalence of this pathology on the farm near the city of Lubumbashi. It is located 30 km from the city of Lubumbashi, on the axis of the Kasenga road, to the east of the Haut-Katanga Province.

This disease plays a key role in perpetuating the downfall of pig farms. That's why we asked ourselves the following questions:

- What would be the categories of pigs most affected by this disease?
- What would be the level of information for breeders and the risk of infection?
- At what rate would the losses be assessed on the farms examined?

This work concerns a farm that experienced swine fever a year earlier and whose pigs were not vaccinated against erysipelas. This disease is a major cause of death in pigs.

The prospective method in clinical diagnosis and care was applied to 98 pigs from 4 zootechnical categories, namely piglets, sows, castrated males and boars. The data collected in this study revealed a prevalence of 81.6% with a mortality rate of 61.2% and a cure rate of 20.4%. Only 18.4% of pigs were not affected by the disease.

The study carried out, involved 98 pigs of different categories including 37 piglets, 35 sows, 6 boars and 20 castrated. These pigs were of exotic Land race, large white, Piétrain and Duroc. There are also hybrid pigs.

We concluded that the results obtained in our research on swine erysipelas concern 98 study animals divided into 4 zootechnical categories. It appeared 80 pigs or 81.6% were struck by erysipelas and only 18 or 18.4% had remained healthy. The infection rate was thus 81.6%.

**Keywords:** Clinics; Therapeutic; Redness; Lubumbashi

### 1. Introduction

Erysipelas is one of the red diseases of pigs. It is caused by a bacterial germ called *Erysipelothrix rhusiopathiae* [1]

\* Corresponding author: Kumwimba Mb

Assistant, Basic sciences, University of Lubumbashi, Lubumbashi, Haut-Katanga, DRC.

In recent years, it has caused sporadic deadly epizootics in herds of turkeys and guinea fowl in France [6].

In sheep, the morbidity rate with arthritis can be quite high, around 20% in lambs [11].

In pigs, outbreaks have been detected in farms, either without a recent pathological history or at the same time as a major viral disease such as swine fever [8]. Erysipelas has also been found in properly vaccinated animals. This disease plays a key role in perpetuating the downfall of pig farms.

The objective of our work was to diagnose swine erysipelas, treat infected pigs and determine the prevalence of this pathology in a farm near the city of Lubumbashi. A prospective methodology was followed in this work, in particular in clinical diagnosis and in the care given to pigs.

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## 2. Material and methods

### 2.1. Material

The study carried out, involved 98 pigs of different categories including 37 piglets, 35 sows, 6 boars and 20 castrated males. These pigs were of exotic breeds: Land race, Large white, Piétrain, Duroc. The farm is located 30 km from the city of Lubumbashi, located at 12 ° 36 ' 19 " South latitude and 27 ° 28'51 " East longitude, at 1268 m altitude. Its climate is tropical, characterized by 7 months of dry season (April to October), followed by 5 months of rainy season (November to March). The annual average temperature is 20 ° [9].

#### 2.1.1. Autopsy and treatment equipment.

We used gloves, Knife, Scalpel blade, Bucket, Boots and overalls, Anatomical clamps, Hemostatic forceps. For treating pigs, syringes, tourniquet, drugs, thermometer.

### 2.2. Methods

We used clinical examination to make the ante-mortem diagnosis [7]. During autopsy, we applied rigorously collection of history; external examination of the corpse; opening and examination of the abdominal cavity and evisceration; opening of the thoracic cavity and evisceration of the thoracic organs; specific examination of organs and tissues; examination of the musculoskeletal system; incineration of contaminated carcasses.

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## 3. Results

For ante-mortem diagnosis, we noticed hyperthermia of 42 ° C in several animals; frequent lameness in adult animals; rhombic and reddish hypertrophic skin patches on the body of animals with itching sensation; vomiting accompanied by diarrhea; hematuria; dyspnea in several animals; sudden death of animals; blood flow through nostrils of the corpse.

As far as post-mortem diagnosis was concerned, sows, dead from swine erysipelas, showed pigment spots, quadrangular or red rhombic plaques all over the skin of cadavers. Red spots, ulcers of gastric mucous membranes were observed in sows and red discoloration of corpses in boars.

Noted symptoms like fever, red spots, diarrhea, were observed in all categories of pigs. Arthritis and nervous disorders have been particularly observed in boars and sows.

The affected sows showed a relative high number with 35 cases, or 35.7%. Boars were the least affected with 6 cases or 6.1%. As for the piglets, they had 24 cases, or 24.5%, a rate higher than that of 15 castrated males, or 15.3%. The prevalence of pigs with erysipelas was 81.6%.

Sows had a higher mortality rate before treatment with 12.2%. Boars had 3 cases or 3.1%. 2 cases were recorded among castrated males, or 2.0%, whereas the piglets had no mortality before treatment.

Piglets remained healthy throughout the study period. However, the mortality rate of 53.1% was not significant compared to only 24.7% cured

Boars and sows died. Only 63.0% of piglets (with 27.0%) and 55.0% of castrated males resisted the disease or were cured. A total of 60 cases perished or 61.2% mortality.

**Table 1** Erysipelas Prevalence in the farm

Zootechnical Category	Sick animals		Safe animals		Total	
	Size	%	Size	%	Size	%
Weaned piglets	24	24,5	13	13,3	37	37,8
Sows	35	35,7	0	0,0	35	35,7
Castrated boars	15	15,3	5	5,1	20	20,4
Non castrated boars	6	6,1	0	0,0	6	6,1
Total	80	81,6	18	18,4	98	100,0

**Table 2** Mortality and recovery rates during two week treatment

Zootechnical Category	Dead animals		Safe animals		Cured animals		Total	
	Size	%	Size	%	Size	%	Size	%
Weaned piglets	10	12,3	14	17,3	13	16,0	37	45,7
Sows	23	28,4	0	0,0	0	0,0	23	28,4
Castrated boars	7	8,6	6	7,4	5	6,2	18	22,2
Boars	3	3,7	0	0,0	0	0,0	3	3,7
Total	43	53,1	20	24,7	18	22,2	81	100

**Table 3** Recorded Global mortality rate

Zootechnical Category	1st Mortality bunch		2nd Mortality bunch		Cured animals		Safe animals		Total	
	Size	%	Size	%	Size	%	Size	%	Size	%
Weaned piglets	0	0,0	10	12,2	14	14,3	13	13,3	37	37,8
Sows	12	12,2	23	23,5	0	0,0	0	0,0	35	35,7
Castrated Boars	2	2,0		7,1	6	6,1	5	5,1	20	20,4
Boars	3	3,1	3	3,1	0	0,0	0	0,0	6	6,1
Total	17	17,3	43	43,9	20	20,4	18	18,4	98	100

#### 4. Discussion

The results obtained in our research on swine erysipelas were about 98 animals divided into 4 zootechnical categories, namely: breeding sows, weaned piglets, castrated males and boars. It appeared that 80 or 81.6% were struck by erysipelas and only 18 or 18.4% had remained healthy. The infection rate was thus 81.6%. This rate was higher than that of 20% found by MULUMBA-NFUMU [10] in 2015 in Kinshasa, in pigs from Kingantoko.

The situation of the examined farm can be linked to a few factors. Indeed, anyone who arrived at the farm should pass through the pigsty before reaching the administrative offices, the dining hall and the agricultural shed. In addition, the equipment used in the pigsty, the henhouse and the animal park is common; it could be involved in interspecific contaminations thanks to the factors of concurrent diseases.

Swine fever, for example, struck this farm in 2015, one year before we undertook the current study. Swine fever contributes to reducing the resistance of the organism, thus breaking the state of equilibrium of animals TOMA [13]. This state of affairs allows the maintenance of a latent carriage of the germ and promotes tissue dissemination from

digestive entry doors (lymphoid formation). Swine fever would be a trigger. From a hygienic point of view, a footbath was available to pigs which did not use it.

Poor cleaning of feeders and waterers, mixed feed on the floor are other contributing factors. The studies of PASTEUR [12] underlined the economic losses related to the erysipelas when he mentioned the death of more than a million pigs in the United States as well as the attributable devastation of the disease in France, and in England. The current study reports a death rate of 61.2%. Considering the before and the course of treatment, the mortality rate was 17.3% and 43.9% respectively. Mortality was highest during treatment (Table 2). This result falls within the range taken from the statement by CHAILLON [6] according to which, pig mortality in France varies between 20 and 80%. In addition, it is observed that all 41 breeding pigs of both sexes died or 41.8% with 35.7% sows and 6.1% boars.

The 11.2% recorded in castrated males brought the total to 62.5%. This is because adult pigs are the most susceptible animals to erysipelas bacilli. It is here that BENET [3] states that piglets are protected by colostrum between 4 and 15 weeks. In this study, 35.1% of the piglets resisted swine erysipelas while 37.8% were cured of the disease. Thus a total of 27 piglets or 72.9% remained alive.

Arthritis was the most common sign in boars along with nervous disorders and fever. In piglets, the situation was somewhat different as the most frequent signs were red patches on the skin, fever and vomiting. In sows, characteristic skin changes were also observed, mainly in the ears, the snout, the neck and the skin of the trunk in the form of rhomboid spots BENEDICTE [2]. Macroscopic lesions of the organs were most often observed: to the liver, spleen, heart, skin, kidney and digestive tract. Due in particular to its cardiac involvement and arthritis, erysipela is considered a notifiable disease.

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## 5. Conclusion

This study concerned a farm that experienced swine fever a year earlier and whose pigs were not vaccinated against erysipelas. This disease is a major cause of death in pigs.

The objective of our work was to diagnose swine erysipelas, treat infected pigs and determine the prevalence of this pathology in a farm near the city of Lubumbashi. The prospective method in clinical diagnosis and care was applied to 98 pigs from 4 zootechnical categories, namely piglets, sows, castrated males and boars. The data collected in this study revealed a prevalence of 81.6% with a mortality rate of 61.2% and a cure rate of 20.4%. Only 18.4% of pigs were not affected by the disease.

Faced with this situation, it was necessary to recommend the following:

- To pig farmers: to monitor the health status of animal supply farms and suppliers; avoid visits by strangers, with particular emphasis on former workers from farms infected with red mullet; use tap water and well water on the farm instead of river water; buy pigs only from healthy farms; not to sell the meat of dead animals; isolate and slaughter affected animals;
- To Veterinarians: to use single-use equipment; burn the corpses; implement a curative treatment from the onset of the disease; Strengthen general hygiene precautions; respect collective control measures in the event of swine erysipela.

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest.

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