

# Pneumonic pasteurellosis in a goat

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## Abstract:

A 3-year-old goat weighing 40 kg was presented to the Large Animal Unit, University Veterinary Hospital, Universiti Putra Malaysia with complains of in appetite, lateral recumbency, and weakness. Physical examination findings were pyrexia, tachycardia, tachypnea, and pale mucous membrane. Harsh and crackles lung sound was noticed upon auscultation. The case was tentatively diagnosed as pneumonic pasteurellosis, and the goat was treated with broad spectrum antibiotic, non-steroidal anti-inflammatory drug (NSAID), and fluid therapy. The prognosis of this case was guarded and the goat died on day after hospitalization and post mortem examination was carried out. Samples were taken from the lungs, heart, and pericardial fluid for bacterial isolation and identification. The post mortem findings were consolidations of the left and right cranialateral lung lobes, frothy exudates along the trachea, bronchi and the cut surface of the lungs and presence of straw-colored pericardial fluid. The bacterial culture yielded *Pasteurella multocida* growth from all the samples. Based on the clinical signs, post mortem findings, and bacteriology result, this case was finally diagnosed as pneumonic pasteurellosis.

## Case History

Pneumonic pasteurellosis is one of the most important economically infectious diseases of ruminants with a wide prevalence throughout the continents. The disease is characterized by an acute febrile course with severe fibrinous or fibrino-purulent bronchopneumonia, fibrinous pleurisy, and septicaemia (Mohammed and Abdelsalam, 2008). *M. haemolytica*, *P. trehalosi*, and *P. multocida* are common commensal organisms of the tonsils and nasopharynx of healthy sheep and goats. They are non-motile gram-negative rods that cause cranioventral bronchopneumonia affecting sheep

and goats of all ages worldwide (Cynthia and Scott, 2012). Infections from these pathogens are associated with poor management practices and occur as a secondary infection or as a consequence of severe stress. Transportation stress, viral infections, overcrowded pens, poor housing conditions, sudden environmental changes, and other stressful conditions increase goats' susceptibility to *P. multocida* and *M. haemolytica* pneumonias (Maria, 2007).

Drugs such as penicillin, ampicillin, tetracycline, oxytetracycline, tylosin, florfenicol, and ceftiofur have been reported to be effective in the treatment of pneumonia in goats (Maria, 2007). Vaccination is the best form of control of the disease. Effective vaccine

such as alum precipitated and oil adjuvant vaccines have been developed (Chandrasekaran et al., 1994; Myint and Jones 2007). Recently, recombinant DNA vaccines that confer significant protection and antibody response in goat have been reported (Ina-Salwany, 2011; Sabri et al., 2013).

### Clinical presentations

A 3-year-old male Jamnapari goat weighing 40 kg was managed semi-intensively and was presented to the University Veterinary Hospital, Universiti Putra Malaysia with complaints of inappetence and weakness. The goat was on lateral recumbency as at the time of presentation. The owner reported to have noticed the condition for the past three days and presented the case to the hospital when he realized the condition of the goat was deteriorating.

Physical examination findings were pyrexia, tachycardia, and tachypnea. The mucous membrane was pale with capillary refill time and skin tenting of more than 2 seconds. The goat was having abdominal breathing with harsh and crackles lung sound upon auscultation.

Post mortem findings for this goat were consolidations of the left and right craniolateral lung lobes (Figure 2). In addition, we noticed froth along the trachea, bronchi, and cut surface of the lung (Figure 3). Also, the presence of straw-colored pericardial fluid was observed (Figure 4). Based on the clinical signs, post mortem findings, and bacteriology result, this case was finally diagnosed as pneumonic Pasteurellosis.

### Diagnostic Testing

Swab samples of the lungs, heart, and pericardial fluid were aseptically collected and sent to the bacteriology laboratory of the Faculty of Veterinary Medicine, Universiti Putra Malaysia for bacteriological isolation and identification. The samples were cultured on 5% horse blood agar and McConkey agar at 37°C for 24 hours. Bacterial identification was done using gram staining and biochemical characterization according to the methods of Carter (1990). Oxidase, urea broth, Sulphur Indole Motility (SIM), Triple Sugar Iron (TSI), and citrate test were performed. *Pasteurella multocida* was isolated from

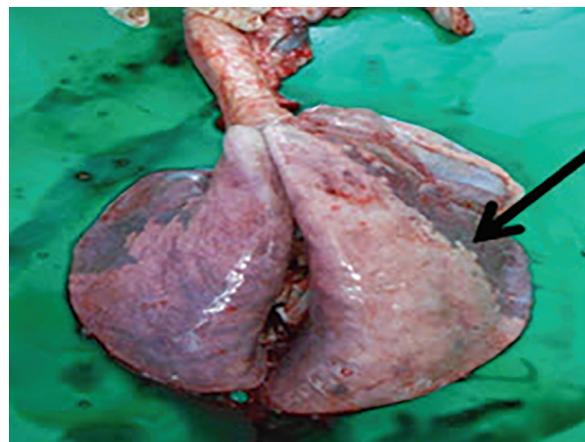


Figure 1. Showed consolidation of the Left and Right craniolateral lung lobes.

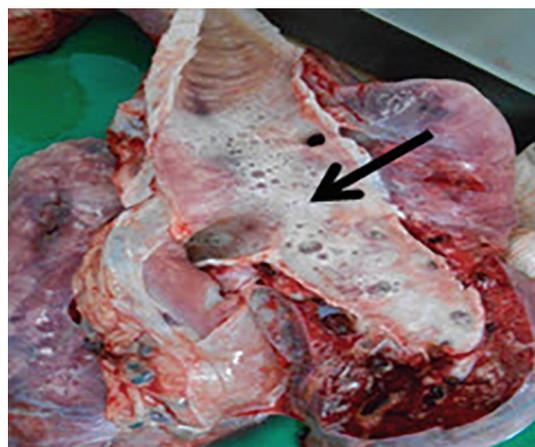


Figure 2. Showed froth along the trachea, bronchi, and cut surface of the lungs.

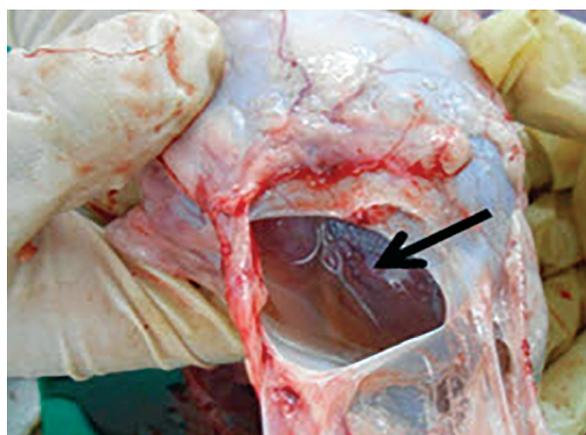


Figure 3. Showed the presence of straw-color pericardial fluid in pericardium.

all the samples submitted to the laboratory.

Swab samples of the lungs, heart, and pericardial fluid were aseptically collected and sent to the

bacteriology laboratory of the Faculty of Veterinary Medicine, Universiti Putra Malaysia for bacteriological isolation and identification. The samples were cultured on 5% horse blood agar and McConkey agar at 37 °C for 24 hours. Bacterial identification was done using gram staining and biochemical characterization according to the methods of Carter (1990). Oxidase, urea broth, Sulphur Indole Motility (SIM), Triple Sugar Iron (TSI), and citrate test were performed. *Pasteurella multocida* was isolated from all the samples submitted to the laboratory (This paragraph is a repetition of the paragraph above).

The prognosis of this case was guarded, and the goat died one day after hospitalization and post mortem examination was carried out.

Based on the clinical presentation and physical examination findings, the case was tentatively diagnosed as pneumonic pasteurellosis. The treatment plan for this goat were Norodine 24 (Trimethoprim 2.5g and sulfadiazine 12.5g) (1 mL/ 16 kg) injection intravenously (I/V) for 3 days as broad spectrum antibiotic, Flunixin meglumine (2.2 mg/kg), intravenously (I/V) for 2 days as anti-inflammatory and analgesic, coupled 0.9% sodium chloride fluid therapy intravenously to replenish the dehydration status of the goat.

## Assessments

The present case was diagnosed as pneumonic pasteurellosis based on the clinical presentations, post mortem results, and bacterial culture findings. The clinical signs of inappetence, weakness, pyrexia, and harsh and crackles lung sound corroborates the reports of Zamri et al. (1994) who reported similar clinical signs in an experimental infection of goats with *Mannheimia haemolytica* A2. The present case can be said to be an acute form of the disease as it has been reported that the disease in goats can manifest in acute, sub-acute, or chronic form (Zamri et al., 1996). The post mortem findings of consolidation of the lung lobes, frothy exudates in the trachea, bronchi, and lung surfaces coupled with straw-colored pericardial fluids depict the postmortem case definition of pneumonic Pasteurellosis by the FAO (2010). The reports of isolation of *Pasteurella multocida* in the lungs from cases of pneumonic Pasteurellosis in the abattoir and in outbreaks of the disease (Momin et al.,

2011; Sadhukan et al., 2011, Salaheden and Hanan, 2012; Marru et al., 2013) affirms the isolation of the same organism from the lungs, heart, and pericardial fluids in the present case. The bacteria have been reported to be a normal flora of the nasopharynx in healthy sheep and goats (Cynthia and Scott, 2012). Stress factors such as transportation, concurrent infections, overcrowding, poor housing, and sudden environmental changes increase goats susceptibility to pneumonic pasteurellosis (Maria, 2007). The administration of Norodine in the present case is in line with that of Maria (2007) who reported that antibiotics such as penicillin, ampicillin, tetracycline, oxytetracycline, tylosin, florfenicol, and ceftiofur were effective in the treatment of pneumonia in goats. Vaccines have been developed for the control of pneumonic pasteurellosis. These include alum precipitated and oil adjuvant vaccines (Chandrasekaran et al., 1994; Myint and Jones 2007). Recently, recombinant vaccine for Mannheimiosis have been developed which was reported to substantially reduce incidence of the disease in Malaysia (Sabri et al., 2013).

In conclusion, pneumonic pasteurellosis is one of the important and devastating diseases in sheep and goats. The disease is caused either by *Mannheimia haemolytica* or *Pasteurella multocida*, and it causes great economic losses to small ruminant industry worldwide. Prevention via vaccination and control of stress factors are the best ways to prevent this disease.

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## گزارش موردی: پنومونی پاستور لایی در بز

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### چکیده

یک بزسه ساله با وزن ۴۰kg به بخش دام‌های بزرگ دانشکده دامپزشکی دانشگاه پوترا مالزی ارجاع داده شد. از علائم بز مذکور بی‌اشتهایی، خوابیدن به یک طرف و ضعف بود. نتایج یافته‌های فیزیکی حکایت از تب، تاکی‌کاردیا، تاکی‌پنیا و کم‌خونی غشاء‌های مخاطی بود. صداهای خشن و غیر عادی بسته به صداهای منتشره قابل شنیدن بود. بیماری بعنوان پنومونی پاستور لایی تشخیص اولیه داده شد و حیوان مذکور تحت درمان با آنتی‌بیوتیک وسیع‌الطیف، داروهای ضد التهابی غیر استروئیدی و درمان سرمی قرار گرفت. تشخیص بیماری با مرگ حیوان در روز بعد قطعی شد و کالبد گشایی به عمل آمد. نمونه‌گیری از قلب، ریه‌ها و مایعات پری‌کاردیت برای کشت باکتریایی اخذ شد. در کالبد گشایی سفتی لب‌های سمت راست و چپ ریه قابل مشاهده بود. بعلاوه اکسودای در طول نای برونش‌ها دیده شد که در برش آنها مایع پری‌کاردیت رنگی قابل رویت بود. نتیجه کشت باکتریایی منجر به جداسازی پاستور لامولتی سیدا از نمونه‌ها شد. براساس یافته‌های بالینی، کالبد گشایی و باکتری شناسی بیماری این دام پونومونی پاستور لایی تشخیص داده شد.

واژه‌های کلیدی: بز، پاستور لامولتوسیدا، پنومونی پاستور لایی.

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