7th World Melioidosis Congress 2013 PPI-Epidemiology and veterinary aspects, Poster Boad No:PPI-06

Goat melioidosis in Taiwan: Clinical and pathological findings

Lu YP.^{1, 2}, Tsai MT.², Chen ST.³, Yang SX.³, Pan MJ.⁴, Chiang YC.⁵, Hsu JP.², Huang JC.³, Liao MH.¹

¹Department of Veterinary Medicine, National Pingtung University of Science and Technology, Taiwan ²Pingtung Livestock Disease Control Center, Taiwan ³Hengchun Research Station, Taiwan Livestock Research Institute, Taiwan

⁴Institute of Biotechnology, Central Taiwan University of Science and Technology, Taiwan ⁵Department of Biological Science, National Sun Yat-sen University, Taiwan

Introduction

Burkholderia pseudomallei is the etiological agent of melioidosis, a severe and fatal disease both in human and animal. The first outbreak of animal melioidosis occurred in a government goat farm located on the southern Taiwan during the rainy seasons in 2006. For the farm was opened to tourists, it raised public health risk issues and caused a great turmoil consequently. Also, because the test-and-slaughter control measure was implemented, it caused huge economic losses.

Clinical signs of goat melioidosis



Methodology and results

After 2006, all suspected dead goats were sent for definite diagnosis in our laboratory by pathology, microbiology and other examinations. The 55% of the cases was culture confirmed infecting the Burkholderia pseudomallei (Bp). These goats showed clinical signs including fever, dullness, anorexia, diarrhea, extreme emaciation, coughing, nasal discharge, respiratory distress, lameness, swollen testicles, mastitis, and abortion. The majority of the incidence concentrated from June to December, when wet season prevails with frequent typhoons in southern Taiwan. The age groups susceptible to infection ranged from around 1-month-old to 10-year-old among various goat breeds. At necropsy, single or multiple yellowish-white and creamy purulent nodules/abscesses were found on various organs including the lung, spleen, liver, lymph nodes, mammary gland, and kidneys. Thoracic and abdominal aortic aneurysm rupture was also noticed. Immunohistochemistry results revealed that Bp antigen present not only in phagocytic cells but also in parenchymal cells. We isolated the bacteria from nasal discharge, urine, milk, and feces of infected animals and detected the genomic markers by real-time PCR from water, soil, and local hay. By using multi-locus sequence typing (MLST) method, ST57 ST58 ST91 and one novel ST genotyp

				were identified from a total of 30 isolates.						Talwan Ma	Talwan Map			
- ")	Location of outbreak farm						Mesul of	Terrum Calify Helicitle City Helicitle City						
Gross path	nological fi	ndings							**	Telchung City, Medi Courty, Yan Courty				
Carotid aneurysm	Aortic aneurysm	Multiple purulent nodules/abscesses in lung	Enlargement of mediastinal lymph nodes	Purulent nodules/abscesses in omentum	Multiple purule nodules/abscess in liver	es nodules/a in spi	purulent bscesses een	lent Multiple purulent isses nodules/abscesses in kidney		Pyogenic mastitis Swollen testis multiple abo		Kinnen County	Changhun Baath Janton County	
	M		6								P	Angoli Coury	Clay Cay Cay Carry Inne Carry Nation Carry Nationary Gary Kanadage Carty	
Rupture of abdominal aneurysm with blood clot	Fibrous plaques on aorta	Coalescing purulent nodules in lung	Coalescing purulent nodules in mediastinal lymph nodes	Purulent nodules/abscesses in adipose tissue	Purulent nodules/absces in liver	Multiple (nodules/a in spi	purulent ibscesses	ent Multiple purulent sses nodules/abscesses in kidney		Purulent nodules/abscesses in mammary gland		tis	And and Conte	
		12		0								La Lo	t.:21 57' ng.:120 48'	
Histopatho	ological find	dings			Imm	unohisto	ochemi	stry r	results (1	Ab:mouse a	nti-Bp poly s	erum + chron	nogen: AEC substrate)	
Fibrous plaques with bacterial colonies on aorta	Aortic aneurysm	Pyogranuloma in Lung	Pyogranuloma in Liver	Pyogranuloma in kidne	y Red col signal in V	or positive Ag VBC of arteritis	Red color positiv signal in foamy o	olor positive Ag Red color po in foamy cell of signal in the answergen broachone		e Ag Red color positive Ag of signal in lymph node		Red color positive signal in splee	e Ag signal in renal tubular n cells	
		0,												
Giant cells in pyogranulomatous arteritis	Aortic aneurysm	Giant cells in pyogranulomatous pneumonia	Pyogranuloma in Spleer	Pyogranuloma in Kidne	Red cold signal in V	or positive Ag VBC of arteritis	Red color positiv signal in foamy o aortic aneury	tive Ag Red color positive Ag y cell of signal in WBC of rysm bronchopneumonia		Red color po in lymphoc	sitive Ag signal ytes of lymph ode	Red color positive signal in splee	n Ag n Ag n Red color positive Ag signal of bacterial clumps at renal tubular cells	
e. Seret							3					X		
1400 Monthly rainfall around the goat farm							MLST genotypes reported from				MLST genotypes reported from human cases in Taiwan			
1200 T €4T 1000 → 2006 → 2007						goat ca MLST	No.	of		ML	ST N	lo. of	Distribution	
600 400	→ ± 2008 → 2009 → 2010 → 2010 → 2011					Genoty ST57	be strain	n(%)	France,	ST50	1	(9.1%)	China, Malaysia, Thailand	
200			7 8		12	0750	40/50		Philippines Malaysia,	ST58	7(63.6%)	Malaysia, Thailand	
Monthly	number of dos	the due to mali	inidacia			5158	16(53.	33%)	Thailand	ST67	1	(9.1%)	Singapore	
Vo. 18 in the outbreak farm during 2006 -2013							4(13.3	33%)	USA	ST99	1((9.1%)	USA, Philippines, Malaysia, Thailand	
14 12					Month	novel S	т 6(20)%)	Taiwan	ST45	1 1	(9.1%)	Taiwan	
							Discussion Among the above mentioned 4 Bp genotypes of goat isolat					ates, ST9	1 genotype had	
	ST58 ge melioido	notype sł sis cas <u>e i</u>	nould b n Tai <u>w</u>	be more atte an. Altho <u>uar</u>	ntion beca 3 out of 4	use it had genotype	been isola s were pre	ited from human						
	2 2 1	1 7	12 1	7 7 1	1	human c	2000 001	o of th	ho form work	ore or viel	tore got inf	octod in th	no past 6 voars	