

Monitoring of the emergence of a new disease in a continent: the case of porcine epidemic diarrhea

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INTRODUCTION

Porcine epidemic diarrhea (PED) is a non zoonotic viral disease of pigs, caused by a coronavirus and characterized by watery diarrhea and weight loss.

The disease affects pigs of all ages, but is most severe in newborn piglets, with morbidity and mortality up to 100%.

PED was described in the 70's in Europe and then outbreaks spread to all countries and became a big problem.

In the 80's PED spread to the Asian countries where also caused great economic losses. T

The American continent was PED free until May 2013

OBJECTIVES

1- Make a historical review of the pathogen, i.e., what relevance has been over time and what role he played until today.

2- Assess their progress once entered a continent, in this case the US.

LITERATURE REVIEW

	Clinical signs	Treatment	Mortality without treatment
TGEV	Watery diarrhea Vomiting Dehydration	Rehydration Cross-immunity with PRCV	Free area → High on piglets less than 1 week old Endemic area → Low
PRCV	Asymptomatic or associated with porcine respiratory complex	Antibiotics to control secondary bacterial infections	None
PEDV	Watery diarrhea Vomiting Dehydration	Rehydration Use of infectious material in pregnant sows and assure colostral immunity in piglets Vaccines	Farm previously free → High in suckling piglets less than 1 week old Endemic farm → some losses at weaning
PHEV	Vomiting Cachexia Encephalomyelitis	Rehydration Colostral immunity Presence of active immunity → subclinical infection	Widespread infection, clinically unapparent



Source: Universidad autónoma agraria Antonio Narro



–The European PEDV strain CV777 was full-length sequenced in 2001.
–3 PEDV strains from the US were sequenced to compare them to the Asian ones.
– The conclusion was that American strains are closely related with the Asian suggesting that the outbreak in US could come from China (Bowman *et al.*, 2014).

– At present, PEDV is the coronavirus that causes most problems

– First description in Europe in 1971, then in the 80s spread to Asian countries, and in 2013 appeared in US.

– Very difficult to distinguish TGE and PED by clinical signs

– Unknown gateway PEDV in the US.

– Large spread once PEDV enters a new country

–There is no treatment for PED

–Once PEDV enters in the US spread quickly to other states, Canada and Mexico.

– Transport of animals and feeding are considered the most important factors for transmission.

–Once PEDV enters on a farm or country, it gets as endemic infection and pigs acquire immunity.

–Infect all the sows at the same time helps to control clinical signs in the farm by developing specific and quick immunity to the herd

–Biosecurity measures are the best way to avoid PEDV entry

– In the US, inactivated and subunits vaccines are allowed, however antibody titer related with protection is unknown.

CONCLUSIONS

– PED appeared first time in the US in 2013 and sequencing of 3 US strains suggests that are from Asian origin

–Once the first cases appear is very difficult, if not impossible, to remove PEDV. The best option is to coexist with it minimizing its impact.

–The best solution when an outbreak appears on the farm is infect all pregnant sows with infectious fecal material to develop strong lactogenic immunity.

–Farm immunity after an outbreak usually lasts 6 months.

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