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ASSESSMENT OF THE EXTENT OF LESIONS, PARASITES AND BACTERIA IN RABBIT FARMS CONTAMINATED BY EPIZOOTIC RABBIT ENTEROCOLITIS (ERE),

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ABSTRACT

This study consists of an assessment of lesions, parasites and bacteria in 10 rabbit farms in the west of France contaminated by rabbit epizootic enterocolitis, in the west of France. The lesions observed in all the infected batches was uniform however old the animals involved were. The analyses carried out do not reveal any specific bacteria to be clearly dominant, but there is a tendency towards coliform proliferation (especially O₂ serotypes) and sulphite reducing organisms in the intestines.

INTRODUCTION

Epizootic Rabbit enterocolitis (ERE) is currently the main pathological syndrome in rabbit breeding throughout the whole of France. Although the cause of the disease has not yet been identified, controlling it includes, amongst other things, precise adapted anti-infective treatments. The aim of this study (carried out in the west of France on 10 cases of enterocolitis) was to assess the extent of lesions, parasites, and bacteria amongst the infected rabbits, following a fixed protocol that was drawn up beforehand by all the participant involved. Laboratory research was carried out following the usual methods and it only applied to the bacteria and parasites that are usually researched in rabbit breeding.

MATERIALS AND METHODS

The study was carried out on 10 rabbit farms in Brittany contaminated by ERE for the first time or subject to a recurrence. Farms were selected after the appearance of the first cases in a batch of rabbits was reported by a breeder and after a visit by a vet or farm technician responsible for confirming the clinical diagnosis and before any treatment was given. The control batch of 4 rabbits (aged 56 days) came from a farm considered to be healthy.

The following clinical criteria were taken to be indicative:

Clinical signs	Always present	Sometimes present
Epidemiological	Marked increase in mortality	Mortality restricted to certain cages
Symptoms	Distension of the abdomen	Rapid and marked decrease in food intake Slight diarrhoea of thick consistency containing mucus

Five rabbits per farm, diseased but alive at the onset of illness, were transported to the laboratory as quickly as possible. These animals suffering from ERE were divided into groups on the basis of age as follows: 3 batches of rabbits aged 29-30 and 35 days (prior to weaning) and seven batches of fattening rabbits aged 43-45-50-60-64-65 and 70 days.

Research carried out at the laboratory

- ◆ Autopsy
- ◆ Parasites: coccidia
- ◆ Bacterioscopy: *Clostridium spiroforme*, Spirochaetae
- ◆ Bacteriological analyses:
 - ◆ Encephalon: *Listeria sp.*
 - ◆ Lungs: coliforms, *Pasteurella multocida*, *Klebsiella sp.*
 - ◆ Intestine: coliforms, Pasteurellae, Klebsiellae, coliform count, count of sulphite reducing bacteria including *Clostridium perfringens*

RESULTS

Autopsy results (Table 1)

The lesions were of a uniform nature in the contaminated farms including the batches affected before weaning, from 25 days of age.

Table 1: Lesions revealed by autopsy

	Distension and wind in the stomach and small intestine	Distension and change in consistency of the caecum
Control rabbits	0 / 4	0 / 4
ENTEROCOLITIS		
- Farms contaminated	10 / 10	10 / 10
- Infected rabbits	37 / 50	33 / 50
Mucus content in the colon		
Control rabbits	0 / 4	
ENTEROCOLITIS		
- Farms contaminated	10 / 10	
- Number of infected rabbits	25 / 50	
- <u>Other observations</u>	frequent cases of cachexia	respiratory lesions very rare

Coccidia (Table 2)

- ↪ Rabbits before weaning: of the 3 farms affected (15 young rabbits analysed in total) only one of the young rabbits was infested with coccidia.
- ↪ Rabbits after weaning in the farms affected by enterocolitis: of the 7 farms concerned (35 rabbits analysed in total) 20 of the rabbits were shown to be infested, to a varying degree, with different coccidia. This infestation started to wear off after 60 days.
- ↪ The control batch (56 days old) (4 rabbits analysed in total): the 4 rabbits had oocysts ; 2 of them were infested with *E. irresidua*.
- ↪ A total absence of *E. intestinalis* and *flavescens* was noted in all the batches.

Table 2: Coccidia

	<i>Eimeria</i>	<i>caecicola</i>	<i>perforans media</i>	<i>magna irresidua</i>	<i>intestinalis flavescens</i>	
Before weaning	Age: 29, 30 & 35 days	+++	+++			
Start of fattening	Age: 43, 45, 50 and 56 days		++			
				+++		
					+	
					++	
		++	++	++++		
			+	++		
			++	+		
				++		
				+	+++	
					+	
		+	+			
			+++	+++		
		-	+			
		Control subjects (56 days)	++	+	++	
+						
+	++		++++			
	++		++++			
End of fattening	Age 60, 64, 65 and 70 days		+	+++		
			++			
				++		
				+		
			++	++++		
		++++	++++			

N.B. a horizontal line corresponds to the results of 1 rabbit testing positive

+	Rare = 1 or 2 per field
++	Some = 2 to 10 per field
+++	Quite numerous = 10 to 30 per field
++++	Numerous = > 30 per field
+++++	Very numerous = "carpeted"

Bacteriology: lungs (Table 3)

↙ Very few pathogenic organisms were found.

↙

Table 3: Bacteriology of lungs

	Control subjects	Farms contaminated enterocolitis	Rabbits infected enterocolitis
<i>Klebsiella</i>	0 / 4	1 / 10	1 / 50
<i>Pasteurella multocida</i>	0 / 4	2 / 10	2 / 50
O₂ Coliforms	0 / 4	3 / 10	07 / 50 (young animals)

Bacteriology: encephalon

↳ No *Listeria* sp.

Bacterioscopic and bacteriological analyses of the intestine (Table 4)

- ♦ *Pasteurella multocida*: absent
- ♦ Coliforms O₂ coliforms detected in 23 animals (=46 %) and in 7 of the contaminated farms (= 70 %)
- ♦ Klebsiellae: very low number found in 40% of contaminated farms and in 20% of infected rabbits.
- ♦ Coliform count: control batch: low in number: 10² to 10⁴ organisms
 - the batches infected with enterocolitis showed a greater number of coliforms (≥ 10⁶) detected in 80% of the contaminated farms and in 58% of the rabbits analysed.
- ♦ Count of sulphite reducing organisms:
 - control batch: number present < 10³ in the 4 rabbits; batches suffering from enterocolitis: a higher number present (≥ 10⁶) in 44% of the animals and in 80% of the batches.
- ♦ *Clostridium perfringens*: this bacteria was present in 40% of the contaminated farms and in 16% of the rabbits.
- ♦ Bacterioscopy (Table no.4)
 - Spirochaetae: low density in 12% of infected animals and in 50% of farms studied.
 - Clostridium spiroforme*: Slightly present in all the infected batches. Only 4% of the infected rabbits were highly infested with *Clostridium spiroforme*.

Table 4: Bacterioscopic and bacteriological analyses of the intestine

	Control subjects	Farms contaminated enterocolitis	Rabbits infected enterocolitis
Pasteurellae	0 / 4	0 / 10	0 / 50
Coliforms	2 / 4 Of which: O ₂ Coli	8 / 10 O ₂ : 7/ 10 O ₁₀₃ : 2 / 10	31 / 50 O ₂ : 23 / 50 O ₁₀₃ : 3 / 50
Kliebsiellae	0 / 4	4 / 10	10 / 50
Spirochaetae	0 / 4	5 / 10	Rare 6 / 50
<i>Clostridium spiroformes</i>	0 / 4	10 / 10	Rare 12 / 50 Some: 14 / 50 Quite numerous 2 / 50 Very numerous 0 / 50
Coliform count	10 ² (2 rabbits), 10 ³ 10 ⁴	≥ 10 ⁶ : 8 / 10	≥ 10 ⁶ : 29 / 50
sulphite reducing organisms	< 10 ³ : 4 / 4	≥ 10 ⁶ : 8/10	≥ 10 ⁶ : 22 / 50
including <i>Clostridium perfringens</i>		4 / 10	8 / 50 10 ⁵ : 1/8 ; 10 ⁶ : 2/8 10 ⁷ : 1/8 ; 10 ⁸ : 2/8 ≥ 10 ⁹ : 2/8

DISCUSSION

This regional assessment returns uniform results. Its significance is that it was carried out on farms situated in the same geographical area.

Thanks to precise sampling and analysis procedures, it was possible to select batches as soon as clinical signs of illness became apparent, before any remedial treatment began, and to transport them to the laboratories within several hours, thus enabling the examination of living animals.

As regards the control batch, it should be noted that no signs of lesions were detected by the autopsy, even though the batch was 56 days old, an age when susceptibility to illness is high.

Furthermore, the bacterial assessment of these animals showed the slight presence of *O₂ E. coli*, but a much lower count of coliforms and sulphite reducing organisms than in the infected batches.

CONCLUSION

The lesions observed in all the infected batches were uniform, however the old animals were involved .

The analyses carried out do not reveal any specific bacteria to be clearly dominant, but there is a tendency towards coliform proliferation (especially *O₂* serotypes) and sulphite reducing organisms in the intestines.

The low level of *Clostridium perfringens* noted in this report and the tendency towards an increase in sulphite reducing organisms in infected batches point towards the necessity to run more detailed studies of anaerobic bacteria in the digestive tract of the rabbit.

This research would enable a better understanding of the effect in farms of certain antibiotics used against this particular type of microorganism, and enable their effect, dosage and the best conditions for their use to be specified.

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