

mier groupe la transmission a été assurée par les tiques mâles et dans le second groupe par les femelles installées 3 à 6 jours après les mâles.

La durée du portage asymptomatique après guérison de la cowdriose doit être un argument majeur pour interdire toute exportation de ruminants à partir des îles infectées de cowdriose car il n'existe, pour le moment, aucune méthode de laboratoire fiable pour détecter ce portage.

CAMUS (E.), Carrier status in Creole goats and cattle after recovery from cowdriosis in Guadeloupe. *Revue Elev. Méd. vét. Pays trop.*, 1992, **45** (2) : 133-135

Creole goats and cattle in Guadeloupe can be carriers of cowdriosis (heartwater : *Cowdria ruminantium*) after recovery for a period as long as 11 months in goats and 2 months in cattle. The carrier status was demonstrated by feeding *Amblyomma variegatum* nymphs on recovered animals and the resulting adult ticks on susceptible goats. *Cowdria ruminantium* was not detected permanently during the carrier status. *Key words* : Creole goat - Creole cattle - Cowdriosis - Carrier status - *Cowdria ruminantium* - *Amblyomma variegatum* - Guadeloupe.

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Biotypes and sensitivity screening *Yersinia enterocolitica* as an infective agent in man and swine in Nigeria

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IKHELOA, (J.O.), ARUNA (M.B.), AYOADE (G.O.). Étude des biotypes et de la sensibilité aux antibiotiques de *Yersinia enterocolitica*, agent infectieux pour l'homme et le porc au Nigeria. *Revue Elev. Méd. vét. Pays trop.*, 1992, **45** (2) : 135-137

Un dépistage de *Yersinia enterocolitica* a été effectué en 1990 sur des échantillons fécaux diarrhéiques d'origine humaine (n = 210) et porcine (n = 192). Dix souches de *Y. enterocolitica* ont été isolés chez le porc et 8 chez l'homme. Les isolats appartenaient aux biotypes 1, 2, 3 et 4 de Wauter. Les isolats de biotype 2 ont été principalement retrouvés dans les selles humaines, le biotype 3 n'a été retrouvé que chez le porc, alors que les biotypes 1 et 4 ont été isolés à la fois chez l'homme et le porc. Les 18 souches ont montré des sensibilités variables aux antibiotiques utilisés dans cette étude. Les germes ont présenté la même résistance à l'ampicilline et à la pénicilline. *Mots clés* : *Yersinia enterocolitica* - Biotype - Homme - Porc - Fèces - Antibiotique - Nigeria.

Introduction

In Nigeria although reports of *Yersinia enterocolitica* infection have been made in both man and swine (2, 8, 9), attempts are made to simultaneously screen both with the aim of determining the most commonly found biotypes. In Nigeria records of *Y. enterocolitica* infection in man are scanty because most routine diagnostic laboratories prefer to screen mainly for *Salmonella*, *Shigella* and *Campylobacter* species as they are the primary causes of severe bacterial gastroenteritis. In swine there is no clear-cut picture of the role of *Y. enterocolitica* in the clinical manifestation of diarrhoea. Observations often reveal that 2-4 week old piglets show signs similar to those of *Y. enterocolitica* (13). Because of lack of knowledge on this organism in man and swine in Nigeria, faecal samples of diarrhoeic patients from the University College Hospital and some piggery farms in Ibadan were screened to determine the predominant biotypes of *Y. enterocolitica* in man and swine and the antibiotic sensitivity of isolated strains.

Materials and Methods

The faecal samples from diarrhoeic piglets (2 to 4 weeks old) were collected from 180 piglets and 12 sows at four pig farms in Ibadan, Nigeria. The samples were collected by inserting a clean spatula smeared with sterile liquid paraffin into the rectum of the animal and the faeces were

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put into universal bottles. Human samples were obtained from 210 diarrhoeic stools submitted to the Department of Medical Microbiology, University College Hospital (UCH, Ibadan) by patients with history of gastroenteritis.

The faecal samples were treated with KOH as described by WEISSFELD and SONNENWIRTH (15) before inoculating onto MacConkey agar (Oxoid cm 109) and CIN agar medium (12). The plates were incubated aerobically at 35 °C for 18 h before being left at room temperature (27 °C) for additional 24 h. Samples which were not positive for the organism were subjected to the cold temperature enrichment technique as described by PAL *et al* (10). After 3 weeks in cold buffered solution, the samples were inoculated into the above media and incubated as previously described.

Antibiotic susceptibility test

Pure isolates of *Y. enterocolitica* grown in nutrient broth (Oxoid cm 67) were diluted 1:1,200. The antibiogram was performed as previously described (3). Antibiotic discs consisting of ampicillin (10 µg), cephalothin (30 µg), erythromycin (15 mg), gentamicin (10 mg), colistin sulphate (10 µg), tetracycline (30 µg), chloramphenicol (30 µg), kanamycin (30 µg), penicillin (10 IU), polymyxin B (300 IU) and cefotaxime (30 µg), respectively were placed on each *Y. enterocolitica* culture by means of sterile forceps. After incubation the diameter of zones of inhibition was measured and compared with that of a standard organism, *E. coli* 10418.

Results and Discussion

Yersinia enterocolitica was isolated from 8 out of 180 diarrhoeic faecal samples from 2 to 4-weeks old piglets while the organism was isolated from 2 out of 12 faecal samples from sows whose litter had clinical signs of diarrhoea. *Y. enterocolitica* was isolated from 8 out of 210 diarrhoeic faeces collected at University College Hospital from patients with gastroenteritis. Tests for the biogrouping of the strains were done as described by WAUTERS *et al* (14). The biotypes of *Y. enterocolitica* strains isolated from man and swine are shown in table I. All of the eighteen strains were resistant to ampicillin and penicillin.

TABLE I *Biotypes of Yersinia enterocolitica isolated from swine and man in Ibadan.*

	Age	Biotypes				Total number of isolates.
		1	2	3	4	
Piglets	2-4 weeks	+ (2)	+ (2)	+ (1)	+ (3)	8
Sows	3 years	—	+ (1)	+ (2)	—	3
Man	1-60 years	+ (2)	—	—	+ (5)	7

+ = positive ; - = negative.
() = number isolated in parenthesis.

They were susceptible *in vitro* to gentamycin, colistin sulphate, tetracycline, chloramphenicol, kanamycin and polymyxin B. They were moderately sensitive to cephalothin, cefotaxime and erythromycin.

Only biotypes 1 and 4 were consistently recovered from human faeces while biotypes 1 to 4 were isolated in faeces from piglets. This probably suggests a contamination of humans by biotypes from piglets. Table 1 also suggests that sows might have infected their litter indirectly during suckling from teats contaminated with faeces. Drinking of water contaminated with faeces could be a source of infection for piglets. Some of the piglets must have taken in *Y. enterocolitica* biotype 1 hitherto regarded as a commensal of the tonsils and digestive tract. The isolation of *Y. enterocolitica* in pigs and man gave results comparable to those of other workers (5, 11, 16) in countries where attempts have been made to determine its prevalence. This calls for a nationwide screening of diarrhoeic faeces in order to fully ascertain the prevalence of *Y. enterocolitica* in man and swine in different parts of Nigeria. The resistance of the isolates to penicillin and ampicillin was in agreement with that observed by other authors (2, 4, 7). This is probably due to the production of β-lactamase by the organism. This enzyme is most likely the factor responsible for the ineffectiveness of the antimicrobial agents. Work is in progress on the serological typing of *Yersinia enterocolitica* isolates.

Conclusion

Some *Yersinia enterocolitica* biotypes found in swine were also isolated from man. It is reaffirmed that piglets could act as a potential source of infection for man through contamination of food and water. Antibiotic sensitivity should be carried out in all cases of diarrhoea due to *Yersinia enterocolitica* in order to determine the most suitable antibiotic for the treatment of infection.

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IKHELOA, (J.O.), ARUNA (M.B.), AYOADE (G.O.). Biotypes and sensitivity screening of *Yersinia enterocolitica* as an infective agent in man and swine in Nigeria. *Revue Élev. Méd. vét. Pays trop.*, 1992, **45** (2) : 135-137

Diarrhoeic faecal samples from 210 humans and 192 swine were screened for *Yersinia enterocolitica* in 1990. Ten and 8 *Y. enterocolitica* strains were isolated from pig and man, respectively. The isolates were found to belong to Wauter's biotypes 1, 2, 3 and 4. Biotype 2 was isolated mainly from human stool samples. Biotype 3 was found only in swine while biotypes 1 and 4 were isolated from both man and swine. All the 18 strains showed varying degrees of sensitivity to antibiotics used in this investigation. The organisms were consistent in their resistance to ampicillin and penicillin. **Key words :** *Yersinia enterocolitica* - Biotype - Man - Swine - Faecal sample - Antibiotic sensitivity - Nigeria.

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Salmonella enteritidis infection in the Sudan

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MAMOUN (I.E.), KHALAFALLA (A.I.), BAKHIET (M.R.), AGAB (H.A.M.), SABIEL (Y.A.), AHMED (H. el J.). Infection à *Salmonella enteritidis* au Soudan. *Revue Elev. Méd. vét. Pays trop.*, 1992, **45** (2) : 137-138

Sur une période de 18 mois, 21 isolats de *Salmonella enteritidis* ont été obtenus à partir de plusieurs élevages de volailles dans trois États du Soudan. L'infection a eu pour origine une centrale de distribution ayant importé des oeufs fertilisés et des effectifs parentaux contaminés. L'épidémie de *S. enteritidis*, qui a dévasté un grand nombre d'élevages de volailles durant l'année 1990, pourrait être attribuée à celle ayant sévi au même moment en Europe en particulier, et dans le monde en général. *Mots clés* : Volaille - Élevage de volailles - *Salmonella enteritidis* - Soudan.

Introduction

In recent years there has been a global increase in *Salmonella enteritidis* infections (3). Since 1987, the number of cases of salmonellosis caused by *S. enteritidis* has increased in Western Europe (2). A great increase in both human and poultry infections with *S. enteritidis* was also recorded in Eastern Europe (1). Several studies in some countries lead to the suggestion that the reason for this global increase is related to the consumption of contaminated eggs and/or poultry meat (3). Import of eggs was incriminated as a source of infection in man (4). The *S. enteritidis* epidemic which devastated many poultry farms in the Sudan during 1990 was concurrent with the global pandemic. This work provides some data on the scope and source of *S. enteritidis* epidemic in the Sudan during 1990.

Materials and Methods

A poultry distributing company with no known history of salmonellosis imported a significant shipment of European fertilized eggs and parent stock in early 1990. On subsequent incubation of the fertilized eggs in the distributing company hatcheries, candling revealed a considerable percentage of dead-in-shell embryos. Four

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