

Brief Communication

REGIONAL ILEITIS IN PIGS
ISOLATION OF CAMPYLOBACTER FROM AFFECTED
ILEAL MUCOSA

In the last few years special interest has been focused on enteric diseases localized to the lower alimentary tract, especially the ileum of weaned pigs. An increasing frequency of disorders of unknown aetiology described as regional ileitis (*Emsbo* 1951), necrotic enteritis (*Jubb & Kennedy* 1970), and intestinal adenomatosis (*Rowland et al.* 1973) has been reported. The changes include thickening of the ileal mucosa with hypertrophy of the muscular wall. The normal structure of villi is replaced by a proliferation of crypt cells. Necrosis of the mucosa and granulation-tissue proliferation in the submucosa occur in later stages. Regional ileitis in man (*Crohn et al.* 1932) which is described as a chronic enteric disease with granulomatous inflammatory changes localized to segments of the ileum is also attracting increasing attention in medical research (*Liljefors* 1972). The lesions are also found in the colon, and the presence of a transmissible agent involved in the aetiology of Crohn's disease has been discussed on the basis of animal experiments (*Cave et al.* 1973). The disease in pigs is accompanied by haematological changes, including decreased concentration of total serum protein, albumin, alkaline phosphatase, and zinc (*Martinsson et al.* 1974, 1976).

By electron-microscopical analysis intracellular microorganisms with the same morphology, in affected ileal epithelium of pigs have been detected by investigations in Scotland (*Rowland et al.*) and in Sweden (*Martinsson et al.* 1974). These microorganisms were isolated and described in 1974, and the name *Campylobacter sputorum* ss. *mucosalis* was proposed (*Lawson & Rowland* 1974, *Lawson et al.* 1975). In consecutive studies, *Jönsson & Martinsson* (1976) observed the intracellular microorganisms in the intestinal mucosa in all cases with typical histological changes. All the examined pigs had clinical signs of a wasting syndrome.

The isolation and characterization of strains of *Campylobacter* from ileal mucosa of Swedish pigs with regional ileitis are presented here. These isolations seem to be the first to be reported outside the United Kingdom.

Bacteriological examinations

Samples were taken from the mucosa of the affected parts of porcine ileum. Four pigs with regional ileitis and ultrastructurally verified microorganisms in the intestinal mucosa were examined. The samples were prepared and homogenized according to the method of *Lawson & Rowland*. The homogenized material was diluted in yeast extract (*Reiland & Hurvell* 1970) in a primary dilution of 1:10, and from that serial dilutions in yeast extract were made. From each dilution Thioglycollate blood agar (TBA) plates (2 % agar) were inoculated with 0.1 ml. Parallel series of seeding on TBA plates were performed after filtration through a 0.65 μ Millipore filter (*Reiland & Hurvell*). The plates were inoculated in an exsiccator in an atmosphere of 75 % CO₂, 15 % air, and 10 % N₂ at 37 °C for 48 hrs. Biochemical tests were performed as described by *Gunnarsson et al.* (1976).

Results and discussion

From two of the examined pigs very small colonies, about 0.5 mm in diameter, were found as the dominant flora on the plates from the first two filtrated dilutions. These small colonies were easily differentiated from the typical brown-red colonies of *Vibrio coli*. In phase contrast microscopy the organisms showed the typical movement and morphology of *Campylobacter*. They were gramnegative and measured $0.3 \times 1 \mu$. On semisolid agar they grew in deep culture. Growth did not occur in 3.5 % NaCl, 1 % glycin, or 1 % ox bile medium. The catalase test was negative. Nitrate was reduced and H₂S production was demonstrated on TSI medium. In tube-agglutination tests the two isolated Swedish strains of *Campylobacter* were agglutinated by rabbit antiserum of the Scottish strains described as *Campylobacter sputorum* ss. *mucosalis* (*Lawson & Rowland*). The titres obtained were at the same level as the homologous titres of the Scottish isolates.*

In both countries the cultured organisms were found in the intestinal mucosa of pigs with regional ileitis and the presence of intracellular microorganisms was demonstrated ultrastructurally. Independently of the size of the macroscopical lesions the appearance of these intracellular organisms was always corre-

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lated to typical histological changes in the intestine (Jönsson & Martinsson). The positive clinical effect of antibiotic therapy reported by Swedish clinicians points to an infectious aetiology for the development of the disease. Further studies with reference to microbiological and clinical findings are in progress.

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