Is *Campylobacter consisus* an unrecognised cause of diarrhoea in New Zealand?

The introduction of a range of interventions to reduce *Campylobacter* spp. contamination of poultry is thought to coincide with a marked decline in campylobacteriosis in New Zealand in recent years.\(^1\)

However, in contrast to international data, infection rates in New Zealand remain high, particularly in young people.\(^2\) This gains greater significance with emerging data linking recent campylobacter infection to increased risk of chronic gastrointestinal (GI) disease.\(^3\) It is also likely that the true incidence of campylobacteriosis is currently underestimated.

Studies have identified emerging and potentially pathogenic species of these bacteria,\(^4\) and these species are unlikely to grow at the higher temperature routinely used to isolate the more common thermophilic strains of *C. jejuni* and *C. coli*. Thus, *C. concisus*, a nonthermophilic *Campylobacter* spp. that is reportedly associated with human gastroenteritis\(^5\) and Crohn’s disease,\(^6,7\) may also account for a proportion of cases of acute diarrhoea of otherwise unknown aetiology.

We cultured 200 stool samples to determine the prevalence of *C. consisus* in faecal samples from individuals presenting with acute enteritis in Christchurch, New Zealand. Samples were plated on CCDA, a blood-free campylobacter isolation media and incubated at 42°C in 10% CO\(_2\) for 48 hours.

In parallel, a faecal suspension was transferred to the surface of a 0.6 µm mixed cellulose ester filter placed on the surface of blood agar plates prepared using 10% sterile defibrinated horse blood.\(^6\) After 40 min incubation at 37°C, the filters were aseptically removed and the plates incubated at 37°C in a hydrogen enriched microaerobic environment for up to 4 days. Small circular colonies or spreading films showing evidence of highly motile spiral bacteria when viewed by light microscopy were then identified using MALDI-TOF mass spectrometry.

*C. jejuni/coli* were isolated from 14 samples using both methods. An additional four isolates were recovered following incubation at 42°C on selective media only, whereas another 8 culture positive isolates were detected by the filtration method only.

These findings suggest that either method will detect the presence of *Campylobacter* spp. in human stool samples, and that the prevalence of *C. jejuni/coli* in people presenting with acute enteric infection is approximately 13%. In contrast, only one *C. concisus* isolate was detected in the 200 samples, and this was by the filtration method only. This finding is in sharp contrast to that of a recent study in the same community where PCR-denaturing gradient gel electrophoresis was used to examine faecal samples from healthy volunteers and individuals with diarrhea.\(^8\) In that study, *C. concisus* was found notably more often than *C. jejuni/coli*, irrespective of whether the participant was healthy or suffering from diarrhoea.
This implies that carriage of these bacteria is more widespread that previously recognized in New Zealand but the prevalence of oral versus gut genomospecies of C. concisus was not determined. Our finding of only one C. concisus isolate from 200 samples (0.05%) suggests that these bacteria are unlikely to account for more than a small proportion of diarrheal cases of unknown aetiology in our community.

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References: