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P0367 Predicting those at risk of recurrence; should we be monitoring Clostridium difficile infection patients with diagnostic assays?

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Background: Diagnosis of *Clostridium difficile* infection (CDI) is well defined in recent guidelines. Prediction of patients at risk of recurrence would help to prevent further cases and reduce transmission. However, there is currently no guidance on how to detect those at risk of CDI recurrence.

Materials/methods: CDI cases (toxin positive) and controls (≥50 year olds, same hospital, no diarrhoea) were recruited and followed during each hospital admission; faecal samples were collected daily where possible, with routine clinical data. Samples were tested using cell-cytotoxicity assay (CCNA), cytotoxigenic culture (CTC), enzyme immunoassays (EIAs) for glutamate dehydrogenase (GDH) and toxins (CHEK-60 and TOXABII, Techlab), and PCR for toxin genes (tgPCR) (BDMax).

Results: 239 patients were recruited: 153 cases/85 controls (total 1194 sampling days). Cases were categorised into single (n=133) and recurrent (another CCNA+ve sample >14 days after a -ve sample) (n=20). Median GDH EIA optical density (OD) values were significantly higher for cases *vs* controls (0.182 *vs* 0.005, p<0.001), and recurrent cases *vs* single cases (0.778 *vs* 0.058, p=0.001). GDH OD value was highly correlated with bacterial load, as measured by semi-quantitative culture (Spearman's = 0.74, P<0.001).

The 20 recurrent cases (mean age 70) had 25 recurrent episodes. For 16/25 (64%) recurrent episodes, from 14/20 cases, GDH was positive before the CCNA+ve that signalled recurrent CDI (median 8.5 days before). 5/14 cases (6/16 episodes) had consistent GDH+ve results, despite resolution of symptoms (mean age 77 years) with 69/70 samples GDH+ve, 55/70 CTC+ve and 59/70 tgPCR+ve. Mean WCC and serum albumin were higher for these 5 patients *vs* standard recurrence ($11.0x10^9$/L *vs* 10.2, p=0.05 and 30.0g/L *vs* 28.4, p=0.2, respectively), while serum creatinine was lower (69.1µmol/L *vs* 100, p=0.04). For 6/6 episodes, antibiotic treatment (abx) occurred before each recurrence; for 4/6 this was not for CDI therapy. 4/5 cases were using concomitant PPIs

Conclusions: We have identified a group of patients who are continually positive by GDH EIA, despite resolution of symptoms, who then develop recurrent infection (toxin positivity) following abx pressure. Closer monitoring of these patients using GDH assays may better inform antibiotic choice and PPI use in patients at risk of recurrence.