Prevalence and Clinical Features of Patients with Colitis Due to Binary Toxin-producing *Clostridium difficile* in a Secondary Care Hospital in Spain. Period 2012-2014

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Introduction and Purpose

Binary toxin (BNT)-producing Clostridium difficile (CD) isolates, including PCR ribotype 027 (NAP1/BI/027) are more likely to develop a severe disease and relapses. In Spain, molecular epidemiology data of CD are scarce and the importance of CD 027 is still unknown. We reviewed the prevalence and clinical features of patients with colitis due to BNT-producing CD within a three-year period in the Hospitalary Complex of Zamora (north-western Spain).

Methods

The study was retrospective, from January 2012 to September 2014. All stool samples were studied as initial screening by a rapid membrane enzyme immunoassay for the simultaneous detection of CD glutamate dehydrogenase (GDH) antigen and toxins A&B (Techlab C. diff Quick Chek Complete, Alere). A PCR real time (GeneXpert C. diff, Cepheid, Izasa) was performed as CD infection (CDI) confirmation test and BNT genes detection in GDH (+)/TOXA&B(-) and GDH (-)/TOXA&B(+) isolates. The statistical analysis was made with SPSS, version 15.0. We reviewed on medical charts clinical features of patients with BNT-producing CD.

Results

Among 172 CDIs, 80 (46.5%) were detected by PCR, 16 (20%) of them were BNT-positive (Table). All but one patient were hospitalized, 62.5% male gender, 93.8% >65 years (range: 66-93), 31.3% abdominal pain and/or diarrhoea as primary cause of admission, 93.8% underlying diseases, 75% antiacids consumption, 30.4 days was the mean duration of hospital stay (range: 2-102), 80% had previous intake of large-spectrum antibiotics (65.2 % beta-lactams; 30.4% quinolones; 4.3% other), 100% were treated with metronidazole (oral vancomycin for relapses in two patients), 81.3% resolution of CDI (two patients were exitus and one patient suffered four relapses).

CDI Detection Assay Result	*2012 N=687*	*2013 N=700*	*2014 N=593*	*Total N=1980*
GDH(+)/TOXA&B(+)	31 (4.5%)	39 (5.6%)	22 (3.7%)	92 (4.6%)
GDH(-)/TOXA&B(-)	620 (90.2%)	623 (89%)	537 (90.6%)	1780 (89.9%)
GDH(+)/TOXA&B(-) PCR (+)	28 (4.1%)	24 (3.4%)	27 (4.6%)	79 (3.9%)
GDH(+)/TOXA&B(-) PCR (-)	7 (1.0%)	13 (1.9%)	6 (1.0%)	26 (1.3%)
GDH(-)/TOXA&B(+) PCR (+)	0	0	1 (0.2%)	1 (0.05%)
GDH(-)/TOXA&B(+) PCR (-)	1 (0.1%)	1 (0.1%)	0	2 (0.1%)
Binary Toxin Detection (PCR (+) Assay)	***N=28***	***N=24***	***N=28***	***N=80***
BNT (+)	6 (21.4%)	4 (16.7%)	6 (21.4%)	16 (20%)
BNT (-)	22 (78.6%)	20 (83.3%)	22 (78.6%)	64 (80%)

Conclusions

- ✓ **A high percentage of binary toxin-producing *Clostridium difficile* isolates was detected, probably due to the algorithm used in our hospital.**
- ✓ **The pathologic significance of BNT-producing CD associated with mortality is not clear considering that most of patients suffered underlying comorbidities and/or were elderly.**
- ✓ **A high rate of recent antimicrobial exposure as classical risk factor of CD infection was observed.**
- ✓ **So far no PCR ribotype 027 *C. difficile* isolates have been detected in our area. Other PCR ribotypes not 027 should be studied by molecular methods in these isolates.**

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