Empirical use of antibiotics, a major contributor in hospital *Clostridium difficile* infection case load. A retrospective study

Authors: Muhammad Usama Aslam, Mehreen Mudassar and Syed Anjum Gardazi

Aims

The aim of this study was to identify risk factors which lead to *Clostridium difficile* infection (CDI) in patients admitted to hospital due to any reason.

Methods

A retrospective study was conducted looking through the records of patients with CDI in a period of 6 months (Aug 2013–Jan 2013) in a district general hospital (DGH) of NHS Wales UK. Thirty-five patients were identified who were flagged as CDI positive either with glutamate dehydrogenase toxin or actual organism in the presence of clinical symptoms. Case-notes and drug-charts were obtained from medical records and clinical state of the patient in question was investigated at the time of infection. Any history of antibiotic use during the episode in question or in previous 3 months (inpatient or outpatient) was documented. Indication for the antibiotics was also identified and whether the indication was confirmed prior to that.

Results

Of the 35 patients the majority were female (21/14) and most were elderly with only nine patients identified as under 70. Prior use of antibiotics both in outpatient or inpatient settings including primary care was identified in 31/35 (88%) patients. Among these, most of the patients (18/31 or 58%) were found to have a history of exposure to more than one antibiotic in the last 3 months. Among the conditions being treated, urinary tract infections covered most of the cases followed by pneumonia. In 18/31 (58%) patients, evidence for the above indication was confirmed prior to starting treatment. Oral metronidazole was the major mode of treatment followed by oral vancomycin (16 vs 5). However, no documentation of severity was identified for selection of one over the other. It was interesting to note the presence of a proton pump inhibitor in 13/35 (37%) patients, which was withheld in some of the cases after CDI was flagged. Only one patient had a prior history of confirmed CDI.

Conclusion

C difficile is the most frequent infectious cause of healthcare-associated diarrhoea and is a significant cause of morbidity, mortality and prolonged hospital stay among hospitalised patients. Most CDI cases are associated with inpatient or outpatient contact with a healthcare setting, particularly antibiotic use. Development of CDI usually requires two events: disruption of the gut flora (typically via exposure to antibiotics) and acquisition of the organism via the faecal-oral route. Prevention and control of *C difficile* includes a number of interventions including emphases on public reporting, careful antibiotic use and infection control measures. Antibiotic use increases the risk of developing CDI seven- to tenfold during and up to 1 month after treatment and approximately threefold for 2 months thereafter. Targeted restriction of a particular antibiotic agent or class of agents can facilitate control of hospital outbreaks and reduce CDI rates in the community. In England, for example, a national shift in antibiotic prescribing between 2006 and 2009 was associated with a reduction in hospital CDI rates by more than 50%. Another study evaluating an antibiotic stewardship programme implemented during the Quebec outbreak in the early 2000s noted a reduction in incidence of nosocomial CDI of 60%.

Recommendations

- Empirical use of antibiotics should be discouraged, specifically in an elderly population (higher risk of CDI and atypical presentation of infections).
- Use of multiple antibiotics or switching between antibiotics should be kept to minimum if possible and a microbiologist should be consulted prior to doing this.
- An indication for the use of antibiotics should always be confirmed.
- Appropriate investigations should be offered to ensure targeted use of antibiotics.
- Treatment for CDI should be selected according to the severity of infection. ■

Conflict of interest statement

None.

Authors: No affiliation provided