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ePoster Session
Clostridium difficile: news on clinical epidemiology and novel approaches to therapy

Adverse outcomes for missed cases of CDI; results from retrospective data collection on patients with samples received during the European, multi-centre, prospective bi-annual point prevalence study of Clostridium difficile infection in hospitalized patients with diarrhoea (EUCLID2)

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Background: A cohort of locally undiagnosed CDI patients was identified from a study that examined the accuracy of diagnosis in hospitals across Europe (EUCLID). We aimed to determine why patients did not receive a CDI test at their hospital, and what the outcomes were of cases with a 'missed' diagnosis.

Material/methods: Each participating hospital (PH) sent routinely submitted diarrhoeal samples to their national coordinating laboratory (NCL) on two days (winter/summer 2012/13) for *C. difficile* infection (CDI) testing using an optimised algorithm. We performed a retrospective case note data analysis of all patients with GDH+/toxin+ samples (at NCLs). These CDIs were divided into 2 groups: patients with positive tests at the PH (DIAGNOSED), and those with no positive tests at the PH (MISSED). MISSED CDIs were further divided into those with false-negative test results (NEGPH) and those not tested at the PH (NTPH).

Results: We identified 100 DIAGNOSED and 42 MISSED CDIs across 84 PHs in 5 countries; 25/42 were NTPH, 16/42 were NEGPH. Patients had similar hospital locations regardless of test result (e.g. general wards for 60.0% DIAGNOSED vs 59.5% MISSED), but there were no MISSED patients in ICU vs 6 DIAGNOSED CDIs. MISSED patients were significantly younger than DIAGNOSED cases (64 vs 80 years, p=0.042); there was no significant difference in age of those with NTPH vs NEGPH (median 62 vs 68.5 years, respectively). Almost all (22/25) NTPH had documented diarrhoea, while only 2/22 had a documented alternative cause. 9/25 NTPH had a previous test for CDI, 3 of which were toxin positive; 9/25 had a subsequent CDI test, 8 (88.9%) of which were toxin positive. Thus, 20/25 (80%) NTPH cases had no documented reason for not undergoing local CDI testing. MISSED CDIs had significantly more days of diarrhoea than DIAGNOSED cases (median 11.5 vs 6.0 days, p=0.044). The mean temperature (on day of test) of MISSED vs DIAGNOSED CDIs was significantly higher (38.4 vs 37.5^{o}C, p=0.002). Mean WCC was lower in MISSED vs DIAGNOSED (12.0 vs 14.7, p = 0.195, not significant). Median hospital length of stay was longer for DIAGNOSED vs MISSED CDIs (17 vs 6 days, p=0.008). Of 8/42 MISSED cases who received treatment for CDI, 5/8 were NTPH. All-cause mortality was higher in DIAGNOSED vs MISSED at 30 days (21.1% vs 16.7%) 90 days (29.8% vs 22.2%) and 365 days (35.1% vs 27.8%), but none of these differences reached significance.

Conclusions: MISSED cases not tested locally usually have no documented reason for failure to test for CDI. MISSED CDIs are younger, associated with significantly increased length of diarrhoea, but shorter hospital stays than locally DIAGNOSED cases. These data emphasise the potential for adverse outcomes if CDI diagnoses are missed.