GDH AND TOXIN A/B CONCENTRATIONS DO NOT DEPEND ON STOOL CONSISTENCY IN PATIENTS WITH CLINICAL SUSPICION FOR CDI

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Introduction

ESCMID diagnostic guidance for *Clostridium difficile* infection (CDI) emphasizes clinical signs and symptoms as the most fundamental criteria for CDI diagnosis. The guideline recommends not to test formed stools for CDI except when a patient has paralytic ileus. Recent studies suggest that toxin A/B positivity predicts CDI. Furthermore, quantification of glutamate dehydrogenase (GDH) and toxins A/B may have diagnostic value by and aiding in prognosis and assessing therapy.

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Materials and Methods

mariPOC® CDI (ArcDia Int. Ltd, Finland, **Fig. 1**) is a new automated antigen test that analyses *C. difficile* GDH and toxin A/B from stool samples. The test can provide quantitative numerical information about the analyte concentration in the stool. This is shown as semi-quantitative signal strength value psi (Ψ). The scale for the psi value is analyte dependent and the quantification power between patients and consecutive samples is limited by physiological conditions and the analyte secretion.

Figure 1. mariPOC® test system.

The purpose of this study was to evaluate the usefulness of the new semi-quantitative test as a tool for CDI diagnostic studies. The stools (N=331) were collected from symptomatic patients as part of routine diagnostics in Vaasa Central Hospital, Finland, during May to September 2017. Median age was 74 (13–98) years. The samples were analysed with mariPOC® CDI test and *C. difficile* toxin B gene PCR (Abacus Diagnostica Oy, Finland). In addition, membrane enzyme immunoassay and/or culture methods were used to confirm the positivity of the samples. The mariPOC® data was analysed with respect to correlation between stool consistency (solid, loose, watery) and semi-quantitative detection of GDH and toxins.

Results

There were 38 GDH and 30 toxin A/B positive mariPOC® results confirmed by other tests. High GDH and toxin A/B concentrations were detected irrespectively of the consistency of the stool (**Fig. 2**). Statistical differences were not observed between different stool consistencies and analyte concentrations (t-test, all >0.1). The highest toxin concentrations were estimated to be at least 0.3 micrograms per gram of stool. Interestingly, the two watery samples that had high toxin concentrations had only low or moderate concentration of GDH.

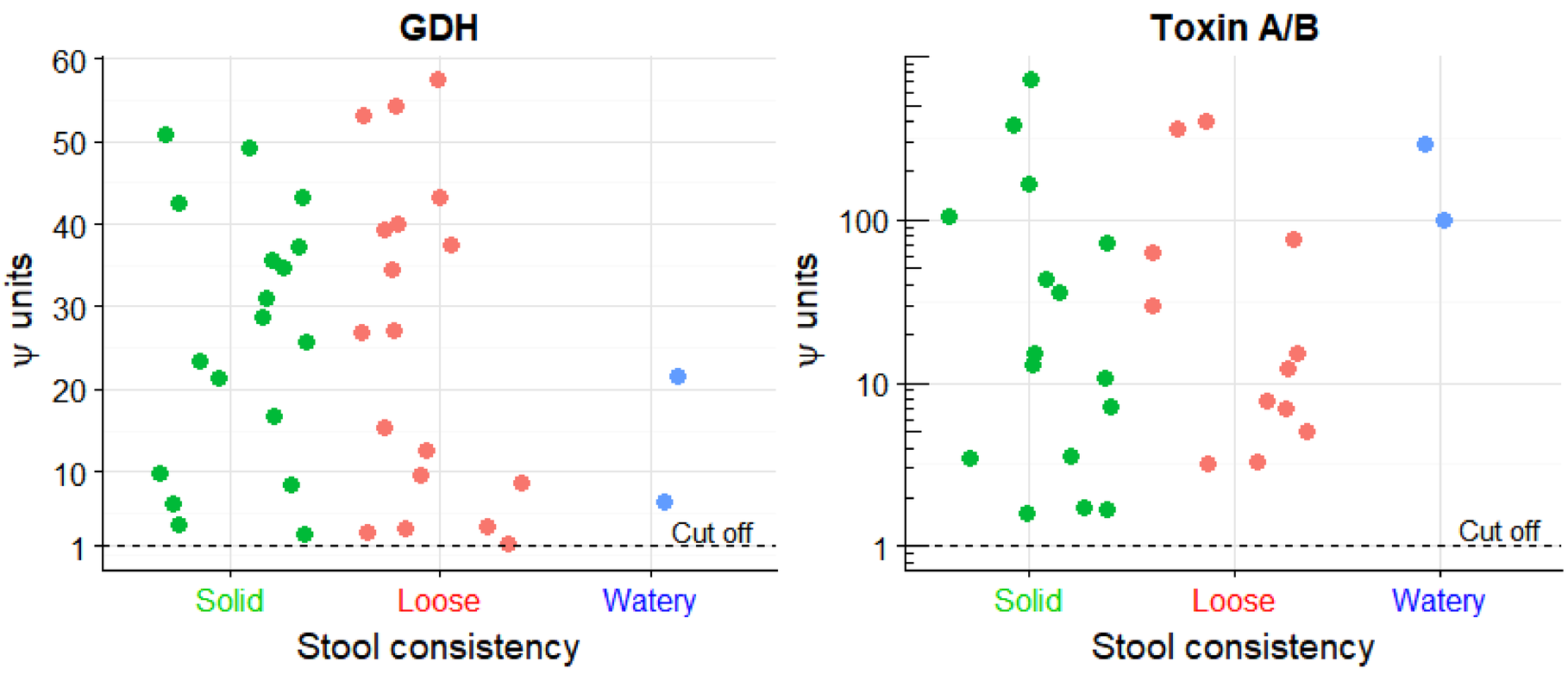

Figure 2. GDH and toxin A/B concentrations shown as psi values (Ψ) in solid, loose and watery stool samples. Analytical sensitivity (cut off) of the GDH and Toxin A/B tests are 0.7 and 0.1 ng/mL, respectively.

Discussion

High GDH and toxin A/B concentrations were detected irrespectively of the consistency of the stool. Our results encourage further studies to assess the diagnostic value of GDH and toxin A/B quantification and the significance of stool consistency in CDI management. The new mariPOC® CDI test provides a practical tool not only for diagnostic testing but also for scientific studies.

ICDS 2018
Bled, Slovenia

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