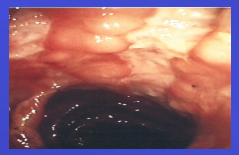
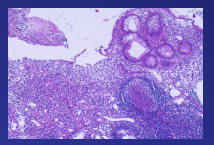


Evaluation of Fecal Biomarkers for Monitoring Antibiotic Treatment of a Patient Infected with *Clostridium difficile*



Poster # 3073

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INTRODUCTION

The current, widespread epidemic of *C. difficile* diarrhea affects most often the elderly, the already ill and those in hospitals. Exposure to antibiotics is an important risk factor. After diagnosis the progression from treatment, with ironically yet further antibiotics, to recovery can be straightforward or it may be complicated by the reappearance of symptoms. Since about one in five patients have a symptomatic relapse and as serial relapses can occur, relapses are potentially expensive as well as devastating to the individuals affected. The speedy identification of treated patients still at risk of relapse would allow physicians an earlier and possibly wider choice of treatments, ranging from observation and stopping the antibiotic that produced the condition in the first instance, to the use of perhaps of vancomycin over metronidazole, or fidaxomicin over both, conserving the effectiveness of these important drugs.

AIM

To evaluate fecal biomarkers for response to treatment using serial stool samples.

METHODS

Patient history - A 66 year old male developed *C. difficile* infection (CDI) following antibiotic treatment for oral infection. After treatment failure with metronidazole, the patient (patient) began vancomycin followed by 1 month of rifaximin and symptoms resolved. One month following rifaximin treatment, the patient suffered a clinical relapsed with diarrhea and abdominal pain and began treatment with Dificid®.

Stool specimens - A total of 33 stool samples were collected from a patient with CDI before, during and after antibiotic treatment. The study was approved by TechLab's IRB and the patient gave his informed consent to the study. The results did not form part of the patient's laboratory diagnosis. Bristol Stool Chart was used to report consistency.

Toxins A & B were determined using the TECHLAB TOX-B (tissue culture) and ABII tests as instructed by the Package Inserts and results were reported as Yes/No and with optical densities at 450/620nm (Dual OD), respectively.

Fecal lactoferrin was measured quantitatively using the IBD-SCAN as instructed by the Package Insert and results are reported as µg/mL stool.

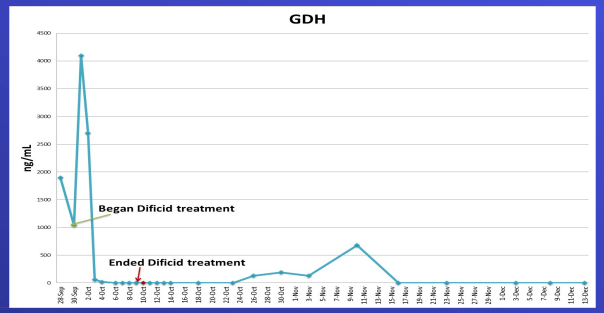
Glutamate dehydrogenase (GDH) was determined by the TECHLAB CHEK-60 test according to the Package Insert and quantitatively (ng/mL) using a modified TECHLAB CHEK-60 Test.

Bacterial culture: Ethanol spore selection with CCFA was used to identify culture-positive specimens. Isolates were subcultured to BHI and grown for 72h.

Ribotyping analysis: DNA was extracted from broth cultures using the QIAamp Mini Kit (Qiagen, Valencia, CA) and results were compared to a standard ribotype library.

RESULTS I

Sampling Date	Bristol Stool Score	Abdominal Pain	ABII Toxin Dual OD	Stool Tissue culture	Stool Lactoferrin >7.24 Elevated	Primary Treatment	CHEK-60 GDH Dual OD	GDH SCAN ng/mL	CCFA Culture result
23-Sep	7	Yes	2.161	Pos	6784 ug/mL	No	4.161	6980	ND
24-Sep	2	Yes	3.749	Pos	73 ug/mL	No	3.953	1310	Pos
26-Sep	2	No	1.099	Pos	65 ug/mL	No	3.964	3310	Pos
28-Sep	2	No	1.369	Pos	2 ug/mL	No	3.445	1900	Pos
30-Sep	2	No	3.036	Pos	7 ug/mL	Dificid BPM	4.067	1040	ND
1-Oct	2 with mucus	No	3.334	Pos	11 ug/mL	Dificid	4.162	4100	ND
2-Oct	2 with mucus	No	3.578	Pos	32 ug/mL	Dificid	4.082	2700	ND
3-Oct	2	No	0.003	Pos	42 ug/mL	Dificid	1.885	60	ND
4-Oct	2	No	0.003	Neg	44 ug/mL	Dificid	0.821	20	Neg
5-Oct	2	No	0.002	Neg	19 ug/mL	Dificid	0.189	7	Neg
6-Oct	2	No	0.003	Neg	1 ug/mL	Dificid	0.001	0	Neg
7-Oct	2	No	0.003	Neg	3 ug/mL	Dificid	0.002	0	Neg
8-Oct	2	No	0.002	Neg	7 ug/mL	Dificid	0.003	0	Neg
9-Oct	2	No	0.002	Neg	2 ug/mL	Dificid	0.003	0	Neg
10-Oct	2	No	0.003	Neg	2 ug/mL	Dificid	0.003	0	Neg
11-Oct	2	No	0.001	Neg	1 ug/mL	No	0.005	0	Neg
12-Oct	2	No	0.002	Neg	4 ug/mL	No	0.003	0	Neg
13-Oct	2	No	0.005	Neg	4 ug/mL	No	0.005	0	Neg
14-Oct	2	No	0.003	Neg	2 ug/mL	No	0.002	0	Neg
18-Oct	2	No	0.003	Neg	1 ug/mL	No	0.002	0	Pos
23-Oct	2	No	0.004	Pos	1 ug/mL	No	0.003	0	Pos
26-Oct	2	No	0.308	Pos	1 ug/mL	No	0.502	130	Pos
30-Oct	2	No	0.004	Pos	2 ug/mL	No	2.659	190	Pos
3-Nov	2	No	0.064	Pos	1 ug/mL	No	1.785	130	Pos
10-Nov	2	No	0.038	Pos	1 ug/mL	No	2.413	680	Pos
16-Nov	2	No	0.005	Pos	0 ug/mL	No	0.068	0	Pos
23-Nov	2	No	0.002	Neg	1 ug/mL	No	0.002	0	Neg
3-Dec	2	No	0.003	Neg	1 ug/mL	No	0.001	0	Neg
8-Dec	2	No	0.002	Neg	ND	No	0.002	0	Neg
13-Dec	2	No	0.003	Neg	4 ug/mL	No	0.002	0	Neg



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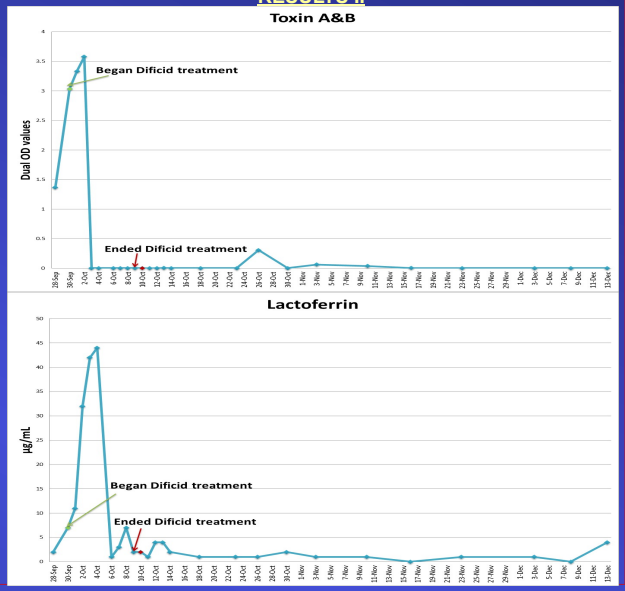
RESULTS II



CONCLUSIONS

- Monitoring GDH and lactoferrin may be useful as indicators for effectiveness of treatment in patients with CDI.
- Identifying a response to treatment may improve patient outcomes and result in better antibiotic stewardship.
- Future studies are needed to determine if monitoring response to treatment will decrease the risk for relapse.