CASE REPORTS FOR FAECAL MICROBIOTA TRANSPLANTATION (FMT) IN HARROGATE DISTRICT HOSPITAL.

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Introduction:

The incidence of Clostridium difficile infection (CDI) has increased approximately 20 fold over the past 20 years, and rates are currently approximately 20 per 100,000 population. There are a number of risks factors for infection including antibiotic use, inflammatory bowel disease, co-morbidities and increasing age. Proton pump inhibitors have also been implicated in CDI, although this association remains controversial. The rising incidence of CDI has been associated with the emergence of more pathogenic strains and this has led to an increase in mortality related to infection. The efficacy of traditional antibiotic therapy for CDI has declined in recent years and this amplifies the problems of increasing incidence and severity of the infection. A systemic review of cases series reported that there were 11 studies involving 273 antibiotic resistant CDI patients and FMT was successful in 89%.

Case 1-

An 85 years old female patient was admitted in Harrogate District Hospital on 14th May 2009 after reporting in A&E via GP referral, presenting with diarrhoea with loose bowel movements 5-7 times a day and loss of appetite. She had previous history of C diff Infection (CDI) which developed after hospital admission for Pneumonia in the year 2008 and had been treated with the recommended doses of Metronidazole and Vancomycin. She had background history of Chronic Renal Impairment and Rheumatoid Arthritis (RA). For her RA she was on Methotrexate.

She was clinically dehydrated on examination; however there was no further deterioration in her U&E results. Her laboratory tests showed Na: 136, K: 4.3, Bicarb: 72, Ur: 19.4, Cr: 218, Hb: 10.9 g/dL, WCC: 22.5, Neut: 20.60, Platelets: 265×10^9/L and microbiological test of stool sample confirmed C.diff. Sigmoidoscopy showed no abnormality. Her diarrhoea continued till 2nd of June 2009 despite of a full of course of Metronidazole and Vancomycin. This led the microbiology consultants to plan for her Faecal Microbiota Transplantation (FMT) and on 8th September 2009 she underwent FMT. Laboratory findings on the day of FMT were: Hb: 10.2 g/dL; Platelets 265 $\times10^9$/L; WCC 9.6; and CRP were 9.0 mg/L; albumin 2.6 g/dL; and Cr 3.2 mg/dL.

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Discussion:

After the procedure, the patient showed good progress and despite having been admitted to hospital for and having had treatment with antibiotics for a number of other reasons on different occasions, she remains C diff -free up until the time of collection of data for the purpose of writing this report (October 2014).

During her admission prior to FMT the patient suffered from continuous diarrhea for over a month and as a result, had to stop her treatment for rheumatoid arthritis. As well as a physical and health issue for the individual, she had to have a long hospital admission, consuming the healthcare resources, as well as being a potential source of infection for other patients. Despite treatment with oral Vancomycin, her symptoms were deteriorating and her CDI was refractory to conventional therapy.

As we can see from the given case, FMT proved to be highly effective in treating refractory CDI and the response to FMT was rapid.

Case 2-

81 years old female patient was admitted in Harrogate District Hospital on 16th May 2014 presented with dehydration, UTI and reduced consciousness with a GCS (Glasgow Coma Scale) of 11. The laboratory tests showed CRP: 141, Bilirubin: 10, Na: 140, K: 4.2, Urea: 24.3, Creat: 80, ALT: 53, Protein: 62, ALP: 230. Treatment was started with intra venous antibiotics. On 2nd day of admission she passed loose motions, and on microbiological tests it was confirmed that she had developed C. diff. Subsequently, she was treated with Vancomycin and Metronidazole. On 23rd May 2014 she had a sigmoidoscopy which confirmed diverticulitis disease and Peudomembranous colitis, as well as duodenal ulcer on gastroscopy. Despite treatment, she continued to have diarrhoea until 25th of July. The microbiology consultants planned her to undergo Faecal Microbiota Transplantation (FMT), which was eventually done on 6th of August 2014.

Discussion:

Although it has not been long since this patient was treated with FMT, she has since been admitted twice in the hospital for different reasons and even as data for this report was being collected (October 2014), she was an in-patient. However, she has not developed any further episodes of diarrhoea or C diff. This was another example of the rapid and long lasting results of FMT in a patient.

procedure of faecal microbiota transplantation (fmt): preparation of donor stool

The stool source for FMT is taken from a family donor. The donor's blood and stool samples are tested against the set criteria, which included tests for HBsAg, HCV Ab, VDRL, *C. difficile* toxin, HIV, and stool culture for gastrointestinal pathogens. Furthermore, the criteria means that the donor should have no history of antibiotic use within the past year or any history of chemotherapy.
Stool specimen is added with 0.9% saline at ratio of 30 g weight of stool with 150 ml saline. The mixture is homogenised in the blender for 2 to 4 minutes until the sample is smooth. The suspension is filtered through a paper coffee filter allowing plenty of times for slow filtration to come to an end. The suspension is filtered once more using fresh paper coffees filter as before.

Transplant procedure:

The stool transplant recipient is treated with Vancomycin 125mg 4 times a day for at least 4 days prior to transplant. The last dose has to be given on the evening prior to transplantation. The recipient is also given Omeprazole 20mg the evening before and on the morning of transplantation. Nasogastric (NG) tube is passed immediately prior to transplantation and position is confirmed with a chest X-ray. 25ml of the stool transplant is administered into the transplant recipient by a syringe into the NG tube. After introducing the stool transplant, the NG is flushed with 0.9% NaCL and removed.
The patient is kept under observation overnight for any possible adverse effects. For reviewing the effects, the patient is seen in out-patients clinic (OPC) in 14 to 28 days along with stool examination for C.diff toxin for confirmation of clearance.