

HKCET Newsletter

Hong Kong Council of Enterostomal Therapists

March 2000

Volume 7.1



Special Topic - Re-feeding of Chymus

Definition

Re-feeding of chymus is to collect all the output from proximal ostomy and re-feed it through the distal mucus fistula. So the digestion, absorption and the elimination process of the intestine can be completed.

Patient's Background

Mr. Yeung, a 64 year-old gentleman, who complained of acute abdomen, suffered from small bowel gangrene from 80 cm distal to duodenojejunal flexure (about 2 m in length). He had undergone an emergency operation for small bowel resection and double barrel jejunostomies.

After the operation, the jejunostomy output was about 2400 ml in 24 hours. Because of the high output stoma, Mr. Yeung had to encounter the metabolic problems included dehydration, electrolytes imbalance and malnutrition. In order to replace the loss fluid and electrolytes, as well as correcting malnutrition, a central line was inserted for him for parenteral nutrition. Initially, Mr. Yeung had received 2000 ml of parenteral nutrition per day. Later on, oral intake was encouraged. After starting the food intake, more intestinal secretion was stimulated and on the 13th day post-operatively, the daily output from proximal ostomy was about 4000 to 5000 ml per day. Since then, another peripheral line for extra intravenous fluid was setup. The cardiac workload was increased so much on the grounds that there was a rapid large amount of fluid gain and fluid loss. Therefore, re-feeding of chymus was considered.

Complications of Parenteral Nutrition

The complications of parental nutrition included metabolic complications (Grant & Todd, 1987), hepatobiliary and

gastrointestinal abnormalities and the risks of central line insertion.

The causes of metabolic complications included inaccurate infusion which led to hypoglycemia or hyperglycemia. Insufficient administration of essential fatty acid or trace elements resulted in different kinds of deficiency. Furthermore, long periods of parenteral nutrition without enteral stimulation would result in multiple deleterious effects on the entire digestive system (Skipper, 1989), such as hepatobiliary and gastrointestinal abnormalities. Besides, complications of central line insertion such as sepsis, air embolism, catheter malposition and pneumothorax would occur.

When to Start the Re-feeding of Chymus

To start re-feeding of chymus depended on the time Mr. Yeung could re-gain the normal bowel function. Firstly, Mr. Yeung's proximal jejunostomy was functioning very well. Secondly, the flatus and mucus were able to pass out from anus. These proved peristalsis regained and free of intestinal obstruction over both proximal and distal parts. Furthermore, the color of proximal jejunostomy and distal mucus fistula were normal. These were good indicators to tell us that Mr. Yeung's gut was satisfactory. After all, Mr. Yeung showed no signs and symptoms of peritonitis. Therefore, re-feeding of chymus could be started on the 13th day post-operatively. If there was suspicious of stricture, fistula or leakage of the bowel, loopogram might be performed before the refeeding program.

The Setup of Re-feeding System

Special devices were needed for the refeeding program. It consisted of a feeding funnel, an infusion pump, a Foley catheter,



2-piece urostomy bag, a bedside bag and a blender.

A Foley catheter size 16 or 18 was chosen for Mr. Yeung. It was because the catheter was soft enough and with a round tip to prevent traumatizing the gut. Too small size catheter would result in frequent blockage and too large catheter would compress on the gut wall and might induce necrosis. The catheter was inserted into the mucous fistula about 6 cm in length and the balloon was inflated with 1ml of water to prevent reflux. The catheter was not advised to be inflated for more than 1ml as this might lead to the development of pressure point on the gut wall and resulted in ulcer. At the beginning, Mr. Yeung complained of mild gut irritation but he adapted to the catheter promptly.

A 2-pieces skin wafer and bag was applied on Mr. Yeung's jejunostomy for better protection of the peristomal skin. Another reason was that in case of any slipped out of the Foley catheter, reposition was much easier without bothering the wafer. A urostomy bag was used and a bedside bag was connected to it in order to facilitate the drainage. Emotional upset resulted from frequent bag emptying could be avoided.



A continuous "chymus drip" was set up in order to prevent pouring of the chymus into the gut. The rate of "chymus drip" depended on daily jejunostomy output. As Mr. Yeung could eat full diet, residue was found in the output. Since the residues could not flow smoothly through the tubing, therefore, the chymus needed to be blended before infusion. Mr. Yeung showed understanding and did not reject the use of a blender. He had no diarrhea after the re-feeding program.

Advantages and Disadvantages

The advantages of re-feeding of chymus were less invasive, less complications and less expensive than parenteral nutrition and the patient could have normal defecation.

In view of less invasive, and it was a clean procedure, it did not run the risks of inserting a central line. In addition, it allowed the completion of digestion, absorption and elimination process. Most of the fluid, electrolytes, and nutrients were re-absorbed by feeding back to his jejunostomy. In comparison with parenteral nutrition, re-feeding of chymus has fewer complications. Besides, Mr. Yeung passed out soft, formed feces from anus, which made him feel more comfortable, and his morale improved. The psychological effect helped Mr. Yeung have a quick rehabilitation and minimized the length of hospitalization.

The disadvantages of re-feeding of chymus were psychological rejection, risk of enterocolitis, labour intensive and limited mobility. At first, Mr. Yeung had the psychological rejection about the idea of re-feeding the chymus. Detailed explanation of the aim and the procedure were given to him and his family. Finally, Mr. Yeung accepted this approach and received good support from his relatives. Actually, Mr. Yeung's rejection was also the reflection of the nursing staff. Education was also

given to the nursing staff and feelings were shared in order to gain mutual understandings. Positive attitude and co-operation were obtained from the health care team with a satisfactory outcome. The trusty relationship between the patient, the medical staff and the nursing staff was also strengthened.

Another disadvantage of re-feeding of chymus was enterocolitis. Although it was not a severe illness in comparison with the sepsis due to the central line, preventive measures were needed. The prevention included covering the feeding funnel with its lid, changing the tubing daily, and changing the Foley catheter every 2 to 3 days and no sharing of the blender as well as the feeding funnel. In the period of re-feeding of chymus, Mr. Yeung did not suffer any enterocolitis.

Furthermore, intensive labour and mobility limitations were also the disadvantages. The nursing staff needed to empty Mr. Yeung's bag at least every 4 hourly and the chymus needed to be blended before each feed. In parenteral nutrition, the infusion fluid was prepared by the pharmacy and the nursing staff only need to setup the infusion once daily. On the other hand, Mr. Yeung still had to carry the drip stand with an infusion pump and a funnel full of chymus when he walked around. The mobility of him could not be improved.

Evaluation

Mr. Yeung had no complications during the re-feeding program. The problem of psychological rejection was solved satisfactorily and the risk of enterocolitis was prevented successfully. He had gained body weight significantly. He was 66 kg before the refeeding but 23 days later, his weight was 69 kg. Normal defecation was regained and gave a very positive psychological support to him. The feeling of "more normal" made Mr. Yeung has a faster rehabilitation.

Conclusion

Patients with double barrel, loop, or divided ostomies in the upper part of gastrointestinal tract always need to encounter metabolic problem due to the excessive loss of fluid, electrolytes, and nutrients (Blumberg, 1993). To replace the loss, intravenous therapy is a method and re-feeding of chymus is another possible therapeutic method for them. It is easy, economic and beneficial to the normal function of the gastrointestinal tract.

Since there is inadequate studies on the aspect of re-feeding of chymus, its benefits cannot be completely admitted. There are still a lot of uncertainties and it is necessary to have more researches on it. Anyway, re-feeding of chymus will be another direction and possible consideration to the patients with enterostomies in the upper part of the gastrointestinal tract.

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3. Grant, A. & Todd, E. (1987) *Enteral and parenteral nutrition*. London : Blackwell Scientific Publications.

Congress Information

The 5th National Congress of Colorectal Disease & The 5th Sino-Japan Colorectal Disease Symposium

Date : 2-5 May, 2000

Venue : Hotel Nikko Pudoing Shanghai, Shanghai, China

Congress Secretariat : Department of Surgery, Rui Jin Hospital,
No 197 Rui Jin Road, Shanghai, China

First World Wound Healing Congress

Date : 10-13 September, 2000

Venue : Melbourne Convention Centre, Victoria, Australia

Congress Secretariat : Intermedia Convention and Event
Management Pty Ltd, PO Box
1280, Milton, QLD 4064, Australia

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