Exploring Probe-Based Confocal Laser Endomicroscopy as a Novel Tool in Graft Monitoring After Small Bowel Transplantation

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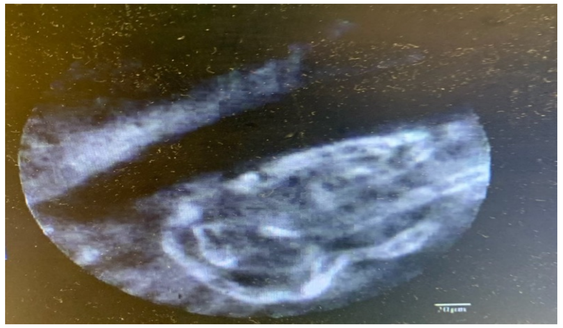
Introduction

- The most common and severe complication early in Small Bowel Transplant (SBT) is graft rejection making timely detection key to graft preservation.
- Endoscopic surveillance with protocol biopsy is the gold standard for graft monitoring.
- Confocal Laser Endomicroscopy (CLE) has emerged as a modality for real-time diagnosis at a histological scale. However, its role in SBT is not known.
- Herein, we report 3 cases of SBT patients and compare CLE results with standard protocols.



Case Presentation

Case 1:
A 73-year-old man underwent SBT for sclerosing mesenteritis and total enterectomy. CLE and ileoscopy was performed 15 times post-transplant without findings of acute cellular rejection (ACR). Patient expired of sepsis on day 30 post-transplant.

Case 2:
A 17-year-old male with familial adenomatous polyposis complicated by total colectomy, hepatoblastoma s/p resection and chemotherapy underwent SBT for large desmoid tumor requiring total enterectomy. CLE and ileoscopy was performed 14 times post-transplant without findings of ACR.

Case 3:
A 23-year-old female underwent SBT for intestinal neuronal dysplasia after chronic rejection from 1st transplant 10 years ago. Ileoscopy done at 20 days post-transplant showed congested and ulcerated mucosa in the proximal ileum. CLE images and histopathology showed findings consistent with ACR. Immunosuppression was increased and reassessment with CLE and ileoscopy done.

Discussion

- Cases 1 and 2 show normal CLE assessment. Normal villus architecture, non-edematous, and adequate microcirculation suggesting low suspicion for ACR.
- This correlated with normal pathology characterized by less than 6 apoptotic bodies per 10 crypts, no intravascular neutrophils, and negative viral cytopathology.
- However, in case 3, CLE images showed significant villus congestion and decreased microcirculation (Image 1) indicative of ACR.
- Biopsies confirmed ACR and rejection protocols were rapidly initiated.
- Repeat CLE and ileoscopy showed recovery of mucosal congestion and return of microcirculation.
- This correlated with complete resolution of ACR on pathology.

Conclusion

- In the absence of endoscopic criteria for small bowel graft rejection, biopsies are the gold standard.
- Enhanced technology for in vivo visualization of grafted bowel is needed and would allow for examination of a greater surface area of the bowel than limited biopsies.
- CLE is a promising tool that could significantly improve early transplant graft monitoring.
- Further data and prospective studies are needed.

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