Capsule Endoscopy and Left Ventricular Assist Devices

BY BRIAN HANSON, MD, RYAN KOENE, MD, SAMIT ROY, MSPH, RANJIT JOHN, MD, NADHEEM CHAUDHARY, MD, PETER ECKMAN, MD, AND JOSE VEGA PERALTA, MD, UNIVERSITY OF MINNESOTA DEPARTMENTS OF GASTROENTEROLOGY AND HEPATOLOGY, CARDIOLOGY AND CARDIOTHORACIC SURGERY

Capsule endoscopy (CE) is a well-established modality for diagnosing obscure gastrointestinal bleeding. Obscure gastrointestinal bleeding in patients with left ventricular assist devices (LVAD) is not unusual. The risk of such bleeding after LVAD implantation is 18% to 40%. The safety and efficacy of CE in patients with LVAD are largely unknown. Researchers from Mayo Clinic described its safety in 14 patients with LVAD but did not include CE findings or clinical outcomes. The purpose of this study was to investigate the safety and efficacy of CE in patients with LVAD.

Methods
A retrospective chart review was performed for all patients with LVAD undergoing CE at the University of Minnesota Medical Center in Minneapolis between January 2007 and August 2014. Thirty-four CE studies performed in 24 patients were identified and reviewed for demographic, laboratory and CE study data in addition to subsequent medical and endoscopic management.

Results
A total of 34 CE studies were performed in 24 patients. Mean age at time of the first CE was 67 years; 20 of the patients (83%) were male. The indications for CE were obscure occult gastrointestinal bleeding in three cases, obscure overt gastrointestinal bleeding in 25 and anemia in six. Capsule endoscopy findings included active bleeding in 12 cases (35%). A potential source was visualized in six of these. When active bleeding was not seen on CE, a high-potential source (AVM, ulceration, tumor) was found in three and an intermediate-potential source (red spots, erosions) in three. Active bleeding and potential sources were found in the stomach (n=3) and small bowel (n=15). The capsule failed to leave the stomach in two cases. Mean small-bowel transit time was 3 hours 44 minutes. No cardiac device malfunction occurred and no capsules were retained. Small-bowel image capture was incomplete in three CE studies.

Medical intervention was the most common management strategy after CE. Medical management was changed after 27 of the 34 CE studies (79%). However, capsule endoscopy findings were not associated with a change in medical management (p=0.69). Nine patients (26%) underwent endoscopic evaluation after CE. Six patients underwent enteroscopy and three had EGD. Sources of the bleeding were an AVM (four patients), Dieulafoy lesion (one patient) and an indeterminate lesion (one patient). Of those patients, five underwent endoscopic intervention.

Six-month follow up was available in all but one patient. During follow up, 10 patients re-bled. Patients with CE finding of active bleeding or high-potential lesion incurred a higher risk of re-bleeding, transfusion and repeated endoscopy. However, this finding was not statistically significant. One patient died during follow up, but the death was not related to gastrointestinal bleeding.

Conclusion
Ours is the largest study of CE in patients with LVAD. We found capsule endoscopy is a safe and effective test for detection of a bleeding source in patients with LVAD. Medical management of patients was changed after CE in the majority of cases, but their CE findings were not associated with this change. Active bleeding found during CE can be successfully treated endoscopically.

REFERENCES