Short Report

Technical Problems Encountered During Esophageal Manometry - An Audit

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High Resolution esophageal manometry (HREM) has become the standard of care for esophageal motility disorders and is currently available across numerous centres in India. Like any procedure, technical challenges and imperfections may be encountered during HREM. The present study is a retrospective audit of technical problems encountered during HREMstudies atChoithram Hospital and Research Centre, Indore during a 4 year period (2013-2016).

All HREM studies were done by a single observer using16 - channel water perfused system (Ready stock, Australia) and reported using Trace 1.3.3 software (Hebbard, Australia). The manometry assembly was placed transnasally while viewing the pressure tracings in upright position. When the catheter had passed into the esophagus, the patient was asked to lie down supine and position of the catheter was adjusted and then fixed, before the tracings were recorded. The standard protocol consisted of the landmark phase for assessment of basal lower esophageal sphincter (LES) position and pressure, 10 five mL water swallows 20-30 sec apart, and one set of multiple rapid swallows where 5 two mL swallows were administered in rapid succession. Landmark phase was done over a 1-2 minute swallow free period at the beginning of the study. The technical challenges encountered were noted along with the findings of manometry study in Microsoft Excel sheet. The data was analysed using appropriate statistical tests.

During the study period, a total of 386 HREM studies were done. Technical problems were encountered in 52 (13.5 %) procedures. These included improper swallows (29, 55.8%), difficulty in measuring basalLES pressures during the landmark phase(16,30.8%) and difficulty in traversing the probe across the esophago gastric junction-EGJ (7, 13.4%).

The most common technical difficulty was improper swallows (29cases). These were mainly due to double-swallowing (18,62 %), repeated belching (9,31%) and vomitings (2,7%). Achalasia was most frequently associated with improper swallows (16,55.2%), followed by large hiatus hernia(12,41.4%) and post fundoplication status (1,3.4%). Retching, repetitive swallowing and intolerance of the catheter at the start of the study protocol was noted in 16 patients. This resulted in difficulty in making measurements of baseline sphincter location and pressures. It has been reported that in patients with catheter intolerance or inability to obtain a landmark phase in the first 5-6 min, the protocol may be modified to get the swallows first, followed by the landmark phase.[1] Hence, landmark phase was done after test swallows in these patients. Inability to traverse the EGJ was another common technical limitation noted in the study (7 cases). The most frequent causes of the difficulty were large hiatal hernias (4,57%), achalasia (2,28.6%) and post fundoplication status (1,14.4%).

Achalasia was the main cause of technically imperfect studies in our series, followed by large hiatus hernia and post fundoplication status. These conditions are associated with impaired EGJ opening and dilation, leading to coiling of the catheter in the distal esophagus. Moreover, presence of esophagealretention reduces tolerability and leads to incomplete swallow protocol.[2] Gentle manoeuvres to guide the catheter tip across the EGJ should be followed in such patients.[3] If these fail, then catheter placement under endoscopic guidance is recommended.[4] Radiological contrast swallow may be used to identify functional or anatomical anomaly, such as impaired esophageal outflow or a slipped fundoplication.[5]

The present study has few important limitations. It is a single centre experience. Other studies have reported that technical glitches like sensor or thermal sensor malfunction and artifacts in upto 13% of cases.[2] However, these were not recorded in our study due to its retrospective nature. The impact of these technical issues on the diagnostic accuracy was also not studied. However, earlier studies suggest that despite technical problems during the procedure, the diagnosis of achalasia is still achieved with good sensitivity and excellent specificity.[2]

To conclude, the present study highlights the technical issues that are encountered while performing esophagealmanometry. Majority of these issues are related either to the patient's underlying disease like Achalasia or anatomical/functional defects like hiatus hernia and post fundoplication status.

References

1. Patel A, Ding A, Mirza F, et al. Optimizing the high-resolution manometry (HRM) study protocol. NeurogastroenterolMotil. 2015;27:300–4
2. Roman S., Kahrilas P.J., Boris L., Bidari K., Luger D., Pandolfino J.E.High-resolution manometry studies are frequently imperfect but usually still interpretable.Clin Gastro Hepatol .2011; 9(12):1050-55
3. Gyawali CP, Bredenoord AJ, Conklin JL, et al. Evaluation of esophageal motor function in clinical practice. NeurogastroenterolMotil. 2013;25:99–133
4. Bredenoord AJ, Hebbard GS. Technical aspects of clinical high-resolution manometry studies. NeurogastroenterolMotil. 2012;24(suppl 1):5–10
5. Raeside MC, Madigan D, Myers JC, Devitt PG, Jamieson GG, Thompson SK. Post-fundoplication contrast studies: is there room for improvement? Br J Radiol. 2012;85:792–799.