

In-House Fatty Meal Cholescintigraphy as a Screening Tool in Patients Presenting with Dyspepsia

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Abstract : Aim: To evaluate the prevalence of gall bladder dysfunction in patients with dyspepsia using In-House fatty meal cholescintigraphy. Materials & Methods: This study is a prospective cohort study. 59 healthy volunteers with no dyspeptic complaints and negative ultrasound and endoscopy were recruited in study. 61 patients having complaint of dyspepsia for duration of more than 6 months were included. All of them underwent ^{99m}Tc -Mebrofenin fatty meal cholescintigraphy following a standard protocol. Dynamic acquisitions were acquired for 120 minutes with an In-House fatty meal being given at 45th minute. Gall bladder emptying kinetics was determined with gall bladder ejection fractions (GBEF) calculated at 30minutes, 45minutes and at 60 minutes (30min, 45min & 60 min). Standardization of fatty meal was done for volunteers. Receiver operating characteristic (ROC) analysis was used to assess the diagnostic accuracy of 3 time points (30min, 45min & 60 min) used for measuring gall bladder emptying. On the basis of cut off derived from volunteers, the patients were assessed for gall bladder dysfunction. Results: In volunteers, the GBEF at 30 min was $74.42 \pm 8.26\%$ (mean \pm SD), at 45 min was $82.61 \pm 6.5\%$ and at 60 min was $89.37 \pm 4.48\%$, compared to patients where at 30min it was $33.73 \pm 22.87\%$, at 45 min it was $43.03 \pm 26.97\%$ and at 60 min it was $51.85 \pm 29.60\%$. The lower limit of GBEF in volunteers at 30 min was 60%, 45 min was 69% and at 60 min was 81%. ROC analysis showed that area under curve was largest for 30 min GBEF (0.952; 95% CI = 0.914-0.989) and that all the 3 measures were statistically significant ($p < 0.005$). Majority of the volunteers had 74% of gall bladder emptying by 30 minutes; hence it was taken as an optimum cutoff time to assess gall bladder contraction. $> 60\%$ GBEF at 30 min post fatty meal was considered as normal and $< 60\%$ GBEF as indicative of gall bladder dysfunction. In patients, various causes for dyspepsia were identified: GB dysfunction (63.93%), Peptic ulcer (8.19%), Gastroesophageal reflux disease (8.19%), Gastritis (4.91%). In 18.03% of cases GB dysfunction coexisted with other gastrointestinal conditions. The diagnosis of functional dyspepsia was made in 14.75% of cases. Conclusions: Gall bladder dysfunction contributes significantly to the causation of dyspepsia. It could coexist with various other gastrointestinal diseases. Fatty meal was well tolerated and devoid of any side effects. Many patients who are labeled as functional dyspeptics could actually have gall bladder dysfunction. Hence as an adjunct to ultrasound and endoscopy, fatty meal cholescintigraphy can also be used as a screening modality in characterization of dyspepsia.

Keywords : in-house fatty meal, cholescintigraphy, dyspepsia, gall bladder ejection fraction, functional dyspepsia

Conference Title : ICNM 2014 : International Conference on Nuclear Medicine

Conference Location : Osaka, Japan

Conference Dates : October 12-13, 2014