CT Colonography - local audit of technical adequacy
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Introduction
Colorectal carcinoma is the 3rd most common malignancy. Most arise from pre-existing benign adenomatous polyps over 10-20 years. The demand for CT Colonography (CTC) is increasing due to a number of factors. Greater life expectancy, improved sensitivity and specificity for detecting colorectal masses and polyps and excess demand on endoscopy departments all play a role.

All CTC examinations should have adequate bowel preparation and distension. We audited our CTC practice in 2012 and re-audited in 2016. During each audit we analysed:

1) Adequate distension of bowel segments
2) Administration rates of IV Hyoscine butylbromide (Buscopan)
3) Use of oral faecal tagging (Gastrografin)

Standards
2nd ESGAR consensus statement on CT colonography (2013):
1. Use of spasmolytics recommended by majority but not mandatory.
2. Faecal tagging is mandatory.
3. Colonic distension should be sufficient that all segments are visualised in one patient position, ideally in both.
4. If segments are inadequately visualised due to poor distension an additional scan is indicated with further insufflation and/or different patient position.

Indicative Targets:
1. 90% administration of Buscopan
2. 95% adequately distended bowel segments on one view
3. 95% administration of faecal tagging

Methodology
Retrospective analysis of all CTC performed over a 6 month period in 2012.
Evaluation of IV Buscopan and oral Gastrografin administration.
If IV buscopan or Gastrografin not given – analyse whether there was a documented reason for this.
30 randomly selected CTC to evaluate distension of each bowel segment on both views.
Repeat audit over a 6 month period in 2016.

Results

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Standard</th>
<th>1st audit 2012</th>
<th>2nd audit 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>-</td>
<td>502</td>
<td>468</td>
</tr>
<tr>
<td>Buscopan given</td>
<td>90%</td>
<td>52%</td>
<td>87%</td>
</tr>
<tr>
<td>Adequate colon distension</td>
<td>95%</td>
<td>66%</td>
<td>77%</td>
</tr>
<tr>
<td>Faecal tagging</td>
<td>95%</td>
<td>Not yet introduced</td>
<td>99%</td>
</tr>
</tbody>
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Action plan following 1st audit:
- Increased education of radiographers and protocol compliance regarding administration of Buscopan and adequate colonic distension.
- Introduction of faecal tagging.

Figures 2a and 2b. Buscopan use and omission at 2nd audit:
- The vast majority were given buscopan, a 35% improvement following clarification of the administration criteria; of the 57 not given Buscopan, 52 had a documented reason.
- The reasons were mostly cardiac (ACS, IHD, arrhythmias) or visual (glaucoma) symptoms

Conclusions
1. Buscopan administration was significantly below standard but following education of staff this improved to almost meet the standard.
2. To improve this further, based on ophthalmology specialist advice and literature review, we omitted the pre-procedure question on history of glaucoma and substituted post-procedure advice to seek urgent medical advice should eye pain and visual loss develop.
3. Colon distension improved but remains inadequate; we have implemented further support and training of radiographers to identify inadequate segments, administer further insufflation and obtain additional views including lateral decubitus.
4. Faecal tagging has been implemented successfully.

References

Figure 1. CT colonography; a polyp is clearly delineated with the use of oral faecal tagging.

Figure 2a. Use of Buscopan

Figure 2b. Reasons for Buscopan omission