GP Direct Access to CT KUB for Suspected Renal Colic
An Evaluation of the Local Trust Pathway

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Introduction

Renal stone disease is common with a lifetime prevalence of 12% in men and 6% in women. CT KUB has become the gold standard for diagnosis, however there is limited access to acute imaging in primary care, often requiring referral to the Emergency Department (ED) instead. To combat this a number of trusts have developed GP Direct Access pathways to imaging. To-date there has been very little research published on their effectiveness. We aim to evaluate the recently instituted GP Direct Access pathway in our Trust.

Methods

The Trust’s GP Direct Access pathway allows referral for same-day CT KUB via the GP Direct Access Clinic (located in hospital). Patients are subsequently discharged after discussion with Surgical Triage Unit (STU) if the scan is normal, referred to Urology if ureteric stones are present, or if serious or life-threatening pathology is detected patients are referred to STU or Resus as appropriate.

Pathway inclusion criteria are the presence of unilateral pain and the ability to control the pain with analgesia. Absence of haematuria does not exclude referral. Exclusion criteria are current pregnancy, age <18 or >70 years old, known solitary kidney, sepsis, known severe renal failure or previous CT or Intravenous Urogram in the preceding 12 months.

A retrospective search of the Radiology Information System (RIS) identified all patients who received a CT KUB within the first six months of the pathway operating (June to Dec 2015). Demographics, referral information and reports (including stone presence, size, and any alternative diagnoses) were pulled from the RIS, as was the number of CT KUBs performed by ED in the months before and during the implementation of the pathway. The Trust’s clinical IT system was used to retrieve discharge summaries.

Results

136 patients were scanned within the first six months of the pathway’s operation. 27 patients (20%) were demonstrated to have ureteric calculi on CT. In patients aged 18 - 49 the percentage of scans demonstrating calculi was lower than the average (10 out of 85 [12%]), whereas in the age group 50 - 70 it was higher (17 out of 51 [33%]), a statistically significant difference (p-value 0.002). A sharp increase in stone diagnoses was demonstrated above the age of 50. Additionally, men were significantly more likely to demonstrate stones than women (10% vs 31%; p-value 0.002). (See Table 1).

12 patients (9%) had other important diagnoses (such as colitis, pancreatitis or non-calculus GU pathology). These correlated positively with age but with no sharp cut-off.

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Number of patients</th>
<th>Number with calculi on CT</th>
<th>Percentage with calculi on CT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>20-29</td>
<td>26</td>
<td>4</td>
<td>15%</td>
</tr>
<tr>
<td>30-39</td>
<td>28</td>
<td>3</td>
<td>11%</td>
</tr>
<tr>
<td>40-49</td>
<td>31</td>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>50-59</td>
<td>28</td>
<td>9</td>
<td>32%</td>
</tr>
<tr>
<td>60-70</td>
<td>23</td>
<td>8</td>
<td>35%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>136</td>
<td>27</td>
<td>20%</td>
</tr>
</tbody>
</table>

There was no change in the volume of renal colic related admissions to ED after implementation of the pathway: ED referred 408 patients for CT in the 6 months prior to the pathway, compared to 407 during the pathway’s first 6 months.

Discussion

There were significant age and gender difference in rates of calculi demonstrated on CT. Particularly concerning was the low yield in young women, 90% of whom had no significant underlying pathology. Even with optimisation CT KUB is a relatively high dose technique (mean 2.3mSv). Furthermore, none of the patients in this age group needed intervention beyond oral analgesia or antibiotics (including the patients with ‘significant alternative findings’ on CT). Larger studies of ED renal colic referrals matching our pathway’s criteria have also found exceptionally low levels of concerning pathology or need for urgent intervention in this demographic.

Patients aged 50 - 70 had a relatively high rate of stones on CT (33%), which compares reasonably with the literature stated ED average (approximately 45%), especially when considering the inclusion criteria (achieving adequate pain control with oral analgesia for 20 minutes described as ‘more painful than childbirth’).

Patients in the 50 - 70 age group also had a much higher chance of requiring admission and also to receive urgent Urological intervention. Older patients are at increased risk of renal impairment and other complications secondary to stone disease. A prompt, alternative referral pathway to ED is thus deemed clinically and cost effective in this age group.

In the 18 - 49 age group the pathway is not providing a effective service. We are currently in discussion with the local CCG to suggest amending the pathway to limit eligibility to patients aged 50 - 70. Patients rendered ineligible could either be treated expectantly by the GP (our research and published literature indicates this is a safe approach), or alternatively could be referred to STU under the pre-existing Acute Abdominal Pain pathway, with the advantage of senior surgical assessment prior to imaging, allowing for selection of a more suitable modality (such as US abdomen or contrast enhanced CT) in cases where the ureteric calculi is a less likely differential.

Conclusion

GP Direct Access referral pathway to CT KUB for suspected renal colic is a clinically and cost effective service in patients aged 50 - 70 years old.

In patients aged 18 - 49 meeting the GP Direct Access inclusion/exclusion criteria a low proportion demonstrate stone disease. These patients also have exceptionally low chances of requiring any intervention beyond simple oral analgesia or antibiotics. The provision of a GP Direct Access pathway in this age group does not meet clinical or cost effectiveness standards and we are recommending its discontinuation.

Acknowledgements

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References

8. Schoenfelder E, Poronsky K, Ellis T, Boshuizen G, Garb J, Mader T. Young patients with suspected uncomplicated renal colic are unlikely to have dangerous alternative diagnoses or need emergent intervention. West J Emerg Med. 2015 Mar;16:269-75/