

Is Imaging in those above 40 Years of Age who Present with Right Iliac Fossa Pain Warranted to Exclude Diverticulitis?

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Abstract

Introduction: Right iliac fossa remains the most common acute surgical presentation and whilst appendicitis remains the diagnosis most prevalent, other colonic pathologies can be present in the older age group. The Royal College of Surgeons on England has advocated the use of imaging in those above the age of 50 years to exclude such pathology. This paper explores whether with the possible earlier age of presentation of acute diverticulitis, and the possible under diagnosis of right sided diverticulitis, whether it would be worth lowering the age of the current imaging cut-off from 50 to 40.

Method: We conducted a retrospective data analysis of all patients presenting with right iliac fossa pain in a large district general hospital in 2016. Criteria for review included patient demographics, imaging reports, pathology results, theatre details and histology results. Those under the age of 18 were excluded from the study.

Results: Throughout the calendar year of 2016, 1052 patients presented with right iliac fossa pain. 657 were female and 395 male. The mean age was 27.1 years. All of the patients above the age of 40 had imaging in the form of Computed Tomography. 32% (n = 337) of all patients included in the study had histologically proven appendicitis. In those 50 years of age or older, the prevalence of appendicitis was 65% and of diverticulitis was 9%. In those between the ages of 40 and 50, the prevalence of appendicitis was 64% and diverticulitis was 5%.

Conclusion: Traditionally imaging has been reserved for the older population to exclude other pathology that may mimic appendiceal inflammation. However, it appears that other pathologies, including right-sided diverticulitis, are being observed in a younger patient demographic. Therefore, there appears to be a case for considering imaging in a younger population.

Keywords: *Imaging; Right Iliac Fossa Pain; Diverticulitis; Appendicitis*

Introduction

Right iliac fossa (RIF) pain is the most common presentation on the acute surgical take and can often pose a diagnostic challenge. The most common cause of RIF pain requiring surgery is acute appendicitis [1], although with increasing age the incidence of alternative colonic pathology rises. Imaging can be helpful in distinguishing different causes of right sided abdominal pain, and in determining appropriate management.

At present, there is a guideline set out by the Royal College of Surgeons of England (along with the Association of Surgeons of Great Britain and Ireland) from 2014, which states that patients over the age of 50 presenting with acute abdominal pain, but without sepsis, would benefit from a computed tomography (CT) scan [2]. The reasoning behind this is that pathologies such as diverticulitis and malignancy are increased in this group.

From our clinical practice, we suspect that diverticulitis is presenting at a younger age than we have seen historically [3], and that right sided diverticulitis may currently be underdiagnosed. Right sided diverticular disease is thought to be very low in Western countries,

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particularly in comparison to East Asia. Research from the United States estimates 1 - 2% of all diverticular disease is right sided [4]. However, a study in France showed that of 103 patients found to have diverticula on colonoscopy, 32.4% were right sided [5]. Studies from countries in East Asia, including Japan, Korea, and Singapore, have found that approximately 70% of diverticular disease is right sided in those populations [6-8]. Furthermore, there is research from East Asia which indicates that right sided disease is more likely to be found in a younger population than left sided disease [8,9], which may be a further indication for imaging a younger population.

This paper explores the incidence of right sided diverticulitis (and other pathologies) in a group of patients presenting with abdominal pain, and the age of said patients at time of diagnosis. We would like to consider, with the possible earlier age of presentation of acute diverticulitis, and the possible under diagnosis of right sided diverticulitis, whether it would be diagnostically beneficial to lower the age of the current imaging cut-off from 50 to 40.

Methods

We conducted a retrospective data analysis of all patients presenting with RIF pain in a large district general hospital in 2016. Criteria for review included patient demographics, imaging reports, pathology results, theatre details and histology results. Those under the age of 18 were excluded from the study.

Results

Throughout 2016, 1052 patients presented with RIF pain; 657 were female and 395 were male. The mean age of the cohort was 27.1 years. All of the patients above the age of 40 had imaging in the form of CT. 32% (n = 337) of all patients had histologically proven appendicitis.

The groups of interest in our study were those above the age of 40, those between the ages of 40 and 50, and those older than 50 years of age.

There were 295 people who were above the age of 40 and presented with right iliac fossa pain. All these patients underwent a CT scan. 64% (190/295) had CT proven appendicitis which was confirmed on subsequent post-operative histology (Table 1). The prevalence of right sided diverticulitis in this group was 8% (n = 24/295).

From the 295 patients over the age of 40, there were 83 patients between 40-50 years of age and 212 patients above the age of 50 years of age. In those between the ages of 40 and 50 years of age, the prevalence of appendicitis was 64% (n = 53/83) (Table 2). The prevalence of diverticulitis was 5% (n = 4/83).

In the above 50 years of age group, the prevalence of appendicitis was 65% (n = 137/212) (Table 3). The prevalence of diverticulitis was 9% (n = 20/212).

Diagnosis	Number	Total
Appendicitis	190	64%
No Pathology	45	15%
Diverticulitis	24	8%
Tubo-ovarian Abscess	11	4%
Urological conditions	10	4%
IBD	10	4%
Caecitis	3	1%
Caecal Malignancy	2	1%
Total	295	100%

Table 1: Demonstrates CT results in those 40 years of age or older.

Diagnosis	Number	Total
Appendicitis	53	64%
No Pathology	9	11%
Diverticulitis	4	5%
Tubo-ovarian Abscess	6	7%
Urological conditions	5	6%
IBD	4	5%
Caecitis	1	1%
Caecal Malignancy	1	1%
Total	83	100%

Table 2: Represents the imaging results for those patients between 40 and 50 years of age.

Diagnosis	Number	Percentage
Appendicitis	137	65%
No Pathology	36	17%
Diverticulitis	20	9%
Tubo-ovarian Abscess	5	2%
Urological conditions	5	2%
IBD	6	3%
Caecitis	2	1%
Caecal Malignancy	1	0%
Total	212	100%

Table 3: Demonstrates CT results in those 50 years of age or older.

Discussion

The results of this study have shown that of those between age 40 and 50 who presented with RIF pain, and who underwent imaging, 5% were suffering from right sided diverticulitis, which is a statistically significant proportion. It also shows that the overall rate of appendicitis was the same in the age 40 - 50 group as in the over 50 age group. Therefore, we can assume that the incidence of alternative diagnoses is similar in both age groups.

Ultimately, imaging a younger population would prevent more negative appendicectomies, which in turn would be cost-saving for the health system. In addition, it would spare patients the risks and complications of anaesthetic and of the surgery itself as well as, possibly reducing amount of time spent in hospital. For those who still required surgery, it would better prepare the surgeon for the scenario, and could prevent lengthy conversions to open or other surgeries.

Before going ahead with any change in policy, it would be necessary to consider the benefits of preventing negative appendicectomies versus the risk of exposing the patient to the level of radiation present when performing a CT scan, in this particular age group.

With regards to right-sided diverticulitis, this study has not compared overall detection rates of right-sided to left sided disease, which would give us more information as to whether the prevalence rates are increasing. It is possible that due to the ever rapidly evolving ethnically diverse population in the UK and people’s constantly changing lifestyles, that right-sided disease is becoming more common than was previously recognised.

Some more focused and large scale research would be helpful in ascertaining a) the evolving epidemiology of right sided diverticular disease, and the overall prevalence rate in the UK, b) the possible benefits of fewer negative appendicectomies and of correctly diagnosing patients under 50 in a more timely manner and c) whether or not diverticulitis is presenting at a younger age.

Limitations of this study include the small sample size, and the retrospective nature of the analysis.

Conclusion

Despite the high incidence of appendicitis in both men and women, with an incidence of 12.5% and 15% respectively; the cause of RIF pain is difficult to ascertain solely on a medical history, physical condition and laboratory findings [10-12]. Traditionally imaging has been reserved for the older population to exclude other pathology that may mimic appendiceal inflammation. However, it appears that other pathologies, including right-sided diverticulitis, are being observed in a younger patient demographic. Therefore there appears to be a case for considering imaging in a younger population.

Compliance with Ethical Standards

This study had no sources of funding. Authors R Fernandes, S McNamara, A Asokan and S Scott all declare that there are no conflicts of interests.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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