

## The Prevalence of Right Sided Diverticulitis in the Western Population

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### Introduction

Both right sided abdominal pain and diverticulitis are commonly encountered on a surgical take. Colonic diverticulum is most prevalent in the sigmoid and descending colon, however they can also be found less commonly in the right colon. Although right iliac fossa (RIF) pain is often found to be acute appendicitis<sup>1</sup>, with increasing age the incidence of alternative colonic pathology such as diverticulitis 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<sup>[2]</sup>. 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 <sup>[3]</sup>, and that right sided diverticulitis may currently be underdiagnosed. Right sided diverticular disease is thought to be very low in Western countries, particularly in comparison to East Asia; research from the United States estimates 1-2% of all diverticular disease is right sided <sup>[4]</sup>. However, a study in France showed that of 103 patients found to have diverticula on colonoscopy, 32.4% were right sided<sup>5</sup>. 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 <sup>[6-8]</sup>.

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 <sup>[8,9]</sup>, which may be a further indication for imaging a younger population.

This paper explores the incidence of right sided diverticulitis in a group of patients presenting with right sided abdominal pain, and the age of said patients at time of diagnosis. In our experience there appears to be an earlier age of presentation of acute diverticulitis and a higher incidence of right sided diverticulitis than traditionally expected.

### Methods

We conducted a retrospective data analysis of all patients presenting with right iliac fossa pain in a large district general hospital in the UK during 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. A diagnosis of right sided diverticulitis was made based on Computed Tomography or intra-operative findings via laparoscopy for suspected appendicitis.

### Results

In the calendar year of 2016, 1052 patients above the age of 18 years 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 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 Computed Tomography scan. 64% (190/295) had CT proven appendicitis which was confirmed on subsequent post-operative histology. 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). 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). The prevalence of diverticulitis was 9% (n=20/212).

There were 2 patients aged 34 and 38 who had undergone a diagnostic laparoscopy for suspected appendicitis and found to have right sided diverticulitis. In both cases, a washout and drain placement was performed. In summary, the prevalence of right sided diverticulitis was 5% (26/510) in those above the age of 30 years. It was 8% in those above the age of 40 years,

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	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 2 demonstrates CT results in those 50 years of age or older

## Discussion

The results of this study have shown that the prevalence of right sided diverticulitis is likely to be higher than traditionally expected. Our literature search found that right sided diverticulitis appears to be less prevalent in the western world, which may be dietary or genetic related. The prevalence of 5% in those above 30 years of age and 8% in those above 40 years of age is higher than previous studies in the United States. To our knowledge there have not been any research studies looking at the prevalence of right sided diverticulitis in the United Kingdom.

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 overall 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 the evolving epidemiology of right sided diverticular disease, and the overall prevalence rate in the UK

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

## Conclusion

The prevalence of right sided diverticulitis was 8% in those above 40 years of age presenting with right sided diverticulitis. Therefore, it although likely to be less common than acute appendicitis as an underlying cause, it remains an important differential. In those above the age of 40, Computed Tomography to exclude diverticulitis as a cause for right sided abdominal pain seems justified.

As we seem to be seeing diverticulitis in general presenting at an earlier age in the Western Population, it may be a diagnosis found at laparoscopy and sought be actively looked for if the suspected pathology was not identified.

## 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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