

Right iliac fossa mass: A prospective study

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Abstract

Patients presenting with mass in the right iliac fossa is common for a surgeon. The causes differ based on the organ of origin. The common conditions include appendicular mass, appendicular abscess, ileocecal tuberculosis and ascending colon carcinoma. Rare conditions include Non-Hodgkin's lymphoma, cecal carcinoma, amoeboma, lymph node mass, iliopsoas mass, retroperitoneal mass and Crohn's disease. This makes it difficult to diagnose and manage these patients. Hence a prospective study on right iliac fossa masses was conducted. Out of a total of 50 patients, the most common cause was of appendicular origin, mainly appendicular mass followed by ileocecal tuberculosis. Pain, fever and leucocytosis were predominantly noted in inflammatory conditions whereas weight loss, anaemia and painless mass were noted in neoplastic causes. Appendicular mass patients were treated conservatively followed by interval appendectomy. Appendicular abscess was drained extra-peritoneally. Right hemi-colectomy was done for carcinoma in the cecum and ascending colon. Tubercular patients with intestinal obstruction also underwent right hemi-colectomy. Intra-venous antibiotics were administered to all infective cases. Tubercular masses were started on anti-tubercular drugs. Carcinoma patients received adjuvant therapy. Crohn's disease and non-specific lymphadenitis were treated medically. Hence our study shows that managing right iliac fossa mass patients can be challenging and requires vigilance.

Keywords: Right iliac fossa mass; appendicular, ileocecal TB

1. Introduction

Mass in the right iliac fossa (RIF) is a common clinical condition that a surgeon faces in one's day to day practice. Various structures from which RIF masses can arise include the terminal ileum, appendix, cecum, ascending colon, iliopsoas region, mesenteric lymph nodes and the retroperitoneal structures [1,2]. They can be inflammatory, infective, neoplastic, etc. Hence it a diagnostic challenge to the treating surgeon. The common conditions include appendicular mass, appendicular abscess, ileocecal tuberculosis [3] and ascending colon carcinoma. Rare conditions include Non-Hodgkin's lymphoma, cecal carcinoma [4], amoeboma, lymph node mass, iliopsoas mass, retroperitoneal mass and Crohn's disease [1,5]. Urologic and gynaecologic masses can also present in RIF.

Most of the above mentioned conditions present with pain in the abdomen, more in the right lower quadrant. It might be associated with fever, nausea, vomiting, constipation, diarrhoea, weight loss etc. Obesity and tenderness make clinical examination difficult leading to diagnostic difficulties. Also those who present with atypical manifestations [6] and associated comorbidities like diabetes

mellitus, hypertension, cardiac illness, etc make the management tougher.

Hence this prospective clinical study was conducted at our institute to evaluate the clinical presentation and management of patients with RIF mass.

2. Materials and methods

A prospective study was conducted in Victoria Hospital, affiliated to Bangalore Medical College and Research Institute, Bangalore, India. The study was approved by the Institutional Ethical Review Board. Written informed consent was obtained from each study subject at the time of enrolment.

A total of 50 patients who presented with RIF mass were included. Patients below 18 years of age were excluded. Patients who were eventually diagnosed to have RIF mass of urologic or gynaecologic origin and those with extra-abdominal pathology were excluded.

After taking detailed history and clinical examination; relevant blood, radiological investigations [7,8] and colonoscopy (if needed) were done to arrive at the final

diagnosis. The patients were managed appropriately based on the diagnosis and surgical indications.

Data was collected, compiled, tabulated and analysed using Microsoft Excel.

3. Results

This was a prospective study comprising of 50 patients who presented with mass in the right iliac fossa of the abdomen.

Table 1: Incidence of disease

Diagnosis	Frequency	Percentage
Appendicular mass	30	60
Ileocecal TB	10	20
Appendicular abscess	4	8
Non-Hodgkin lymphoma	1	2
Ascending colon carcinoma	1	2
Cecal carcinoma	1	2
Intussusception	1	2
Non-specific lymphadenitis	1	2
Crohn's disease	1	2
Total	50	100

Out of 50 patients, 30 had appendicular mass which was the most common diagnosis. 10 had ileocecal TB and 4 had appendicular abscess, 1 patient each had Non-Hodgkin's lymphoma, ascending colon carcinoma, cecal carcinoma, intussusception, Crohn's disease and non-specific lymphadenitis.

Table 4: Symptoms on presentation

Diagnosis	Pain abdomen	Nausea / vomiting	Fever	Constipation	Diarrhoea	Weight loss
Appendicular mass	30	20	30	0	0	0
Ileocecal TB	10	0	10	2	2	0
Appendicular abscess	4	4	4	0	1	0
Non-Hodgkin lymphoma	1	0	1	0	0	0
Ascending colon carcinoma	1	0	0	0	0	1
Cecal carcinoma	0	0	0	0	0	1
Intussusception	1	1	0	1	0	0
Non-specific lymphadenitis	1	0	1	0	0	0
Crohn's disease	1	0	0	1	1	0

Pain in the right lower abdomen was the most common symptom in inflammatory causes followed by fever. Dull aching pain with weight loss was noted in neoplastic causes.

Table 5: Characteristics of mass

Diagnosis	No. of cases	Tenderness	Consistency	Borders	Mobility
Appendicular mass	30	30	Firm	Well defined except lower border	Restricted
Ileocecal TB	10	4	Firm	Ill defined	Restricted
Appendicular abscess	4	4	Firm	Well defined except lower border	Restricted
Non-Hodgkin lymphoma	1	1	Firm	Ill defined	Mobile
Ascending colon carcinoma	1	0	Hard	Well defined	Fixed
Cecal carcinoma	1	0	Hard	Well defined	Fixed
Intussusception	1	1	Soft	Ill defined	Mobile
Non-specific lymphadenitis	1	1	Firm	Well defined	Mobile
Crohn's disease	1	1	Firm	Ill defined	Restricted
Total	50	42	-	-	-

Table 2: Age distribution (years)

Diagnosis	<20	21-30	31-40	41-50	>50
Appendicular mass	4	22	3	1	0
Ileocecal TB	0	1	7	2	0
Appendicular abscess	1	2	1	0	0
Non-Hodgkin lymphoma	0	0	1	0	0
Ascending colon carcinoma	0	0	0	1	0
Cecal carcinoma	0	0	0	0	1
Intussusception	0	0	1	0	0
Non-specific lymphadenitis	1	0	0	0	0
Crohn's disease	0	0	0	1	0
Total	6	25	13	5	1

Mean age was 30.94 years. Most of the patients belonged to 21-30 years' age group followed by 31-40 years.

Table 3: Sex distribution

Diagnosis	Male	Female	Total
Appendicular mass	18	12	30
Ileocecal TB	6	4	10
Appendicular abscess	2	2	4
Non-Hodgkin lymphoma	0	1	1
Ascending colon carcinoma	1	0	1
Cecal carcinoma	1	0	1
Intussusception	1	0	1
Non-specific lymphadenitis	0	1	1
Crohn's disease	1	0	1
Total	30	20	50

Out of 50 patients, 30 were male and 20 were female. Appendicular cause was common in male patients. Non-specific lymphadenitis was noted in a female.

Inflammatory masses were tender and firm in consistency. Tubercular mass was predominantly non-tender and firm. Neoplastic masses were hard, non-tender and fixed.

Table 6: Haemoglobin <10g/dl

Diagnosis	No. of cases	Haemoglobin<10g/dl
Appendicular mass	30	11
Ileocecal TB	10	7
Appendicular abscess	4	1
Non-Hodgkin lymphoma	1	1
Ascending colon carcinoma	1	1
Cecal carcinoma	1	1
Intussusception	1	0
Non-specific lymphadenitis	1	0
Crohn's disease	1	1
Total	50	23

Neoplastic and tubercular masses were associated with anaemia.

Table 6: ESR

Diagnosis	No. of cases	ESR <20	ESR 21-40	ESR >40
Appendicular mass	30	22	8	0
Ileocecal TB	10	0	1	9
Appendicular abscess	4	2	2	0
Non-Hodgkin lymphoma	1	0	0	1
Ascending colon carcinoma	1	0	0	1
Cecal carcinoma	1	0	0	1
Intussusception	1	1	0	0
Non-specific lymphadenitis	1	0	1	0
Crohn's disease	1	0	0	1
Total	50	25	12	13

Neoplastic and tubercular masses were associated with elevated ESR.

Table 7: Leukocyte count

Diagnosis	No. of cases	Elevated leukocyte count
Appendicular mass	30	30
Ileocecal TB	10	7
Appendicular abscess	4	4
Non-Hodgkin lymphoma	1	1
Ascending colon carcinoma	1	0
Cecal carcinoma	1	0
Intussusception	1	0
Non-specific lymphadenitis	1	1
Crohn's disease	1	1
Total	50	44

Inflammatory causes were associated with elevated leukocyte count. [9-11]

Table 7: Treatment modality

Diagnosis	No. of cases	Conservative	Surgical
Appendicular mass	30	30	0
Ileocecal TB	10	8	2
Appendicular abscess	4	0	4
Non-Hodgkin lymphoma	1	1	0
Ascending colon carcinoma	1	0	1
Cecal carcinoma	1	0	1
Intussusception	1	0	1
Non-specific lymphadenitis	1	1	0
Crohn's disease	1	1	0
Total	50	41	9

Appendicular mass patients were treated conservatively followed by interval appendectomy. Appendicular abscess was drained. Tubercular mass presenting with intestinal obstruction underwent surgery. Carcinoma patients underwent surgery followed by adjuvant therapy.

Table 8: Types of surgery

Diagnosis	Ochsner-Sherren regimen with interval appendectomy	Extra-peritoneal drainage with interval appendectomy	Right hemicolectomy
Appendicular mass	30	0	0
Ileocecal TB	0	0	2
Appendicular abscess	0	4	0
Non-Hodgkin lymphoma	0	0	0
Ascending colon carcinoma	0	0	1
Cecal carcinoma	0	0	1
Intussusception	0	0	1
Non-specific lymphadenitis	0	0	0
Crohn's disease	0	0	0
Total	30	4	5

Appendicular mass patients underwent interval appendectomy. Appendicular abscess patients were subjected to extra-peritoneal drainage of abscess with interval appendectomy. Right hemi-colectomy was done for carcinoma in the cecum and ascending colon. Tubercular patients with intestinal obstruction also underwent right hemi-colectomy.

Table 9: Complications

Diagnosis	No. of cases	Wound infections	ARDS	Sepsis
Appendicular mass	30	3	0	0
Ileocecal TB	10	0	0	0
Appendicular abscess	4	2	1	1
Non-Hodgkin lymphoma	1	0	0	0
Ascending colon carcinoma	1	0	0	0
Cecal carcinoma	1	0	0	0
Intussusception	1	0	0	0
Non-specific lymphadenitis	1	0	0	0
Crohn's disease	1	0	0	0
Total	50	5	1	1

Wound infection after surgery was the most common complication. ARDS and sepsis were present in 1 appendicular abscess patient.

Table 10: Adjuvant therapy

Diagnosis	No. of cases	IV antibiotics	ATT	Chemotherapy	Sulfasalazine & steroid enema
Appendicular mass	30	30	0	0	0
Ileocecal TB	10	0	10	0	0
Appendicular abscess	4	4	0	0	0
Non-Hodgkin lymphoma	1	0	0	1	0
Ascending colon carcinoma	1	0	0	1	0
Cecal carcinoma	1	0	0	1	0
Intussusception	1	1	0	0	0
Non-specific lymphadenitis	1	1	0	0	0
Crohn's disease	1	1	0	0	1
Total	50	37	10	3	1

Intra-venous antibiotics were administered to all infective cases. Tubercular masses were started on anti-tubercular drugs based on the category. Carcinoma patients received adjuvant chemotherapy. Crohn's disease was treated medically using Sulfasalazine and steroid enemas.

4. Discussion

This study aimed to evaluate the clinical features and management of RIF masses presenting to a General Surgeon. Based on our findings it can be concluded that appendicular mass is the commonest, followed by ileocecal tuberculosis. Most of the patients belonged to the

age group of 21-40 years. Appendicular causes were managed conservatively or by abscess drainage followed by surgery. Ileocecal tuberculosis was diagnosed based on blood and radiological investigations along with colonoscopy. Those with obstruction underwent surgery and all were started on anti-tubercular treatment. [12-17]. Carcinoma patients underwent right hemicolectomy followed by adjuvant therapy. NHL patient was treated with chemotherapy. Intussusception patient underwent resection and anastomosis. Non-specific lymphadenitis and Crohn's disease were managed conservatively.

5. Conclusion

Hence the surgeon must keep in mind that even though mass of appendicular origin and tuberculosis are common in the RIF, precaution must be taken to not miss the rarer causes, in order to diagnose and treat them at the earliest.

Conflict of interest

We have no conflict of interest to declare.

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