International Surgery Journal
Jayakar SR et al. Int Surg J. 2020 Mar;7(3):757-763
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20200818

Original Research Article

A prospective study of the lumps in the right hypochondrium

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Received: 16 December 2019
Revised: 09 February 2020
Accepted: 12 February 2020

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ABSTRACT

Background: The abdominal cavity can harbour a varied spectrum of diseases. Abdominal lumps are one of the commonest disorders in this region. The clinical presentation, diagnosis, minimal investigations and optimum treatment of the lumps in the right hypochondrium were studied in detail in present study.
Methods: The prospective observational study was carried out for 24 months. 60 consecutive patients who satisfied the inclusion criteria were taken up for the study. Calculation and analysis of data was done by using MS Excel.
Results: The lumps in the right hypochondrium were most common in the 31-40 years age group in the present study. Majority of the lumps were found to be intraperitoneal (65%), of which 45% were neoplastic in nature. 68.3% as compared to 31.7% of lumps had an organ of origin which was not anatomically situated in the right hypochondrium viz. from right kidney and right adrenal. Hepatic lumps were found to be the commonest (35%), of which 14.3% were malignant tumors. Gall bladder carcinoma was more common in 40-60 years with female preponderance. Only 26.7% patients presented with the complaint of lump in abdomen. The commonest complaint was pain in the abdomen followed by vomiting. In 88.3% cases surgery was undertaken for curative or palliative purposes.
Conclusions: Of all the lumps in the right hypochondrium, intraperitoneal lumps were more common with abdominal pain as commonest presenting symptom. The commonest lumps were found to be hepatic lumps. Incidence of Neoplastic masses was more than infections and infestations.

Keywords: Aetiological classification of lumps, Anatomical origin of lumps, Intra-peritoneal lumps, Right hypochondrium lumps

INTRODUCTION

The abdominal cavity can harbor a varied spectrum of disease, putting many able surgeons into a quandary. Various disorders can present as abdominal complaints. Abdominal lumps are one of the commonest disorders in this region. Different types of abdominal lumps have been assessed systematically by many clinicians. But there is a definite need for a comprehensive and systematic research in this field. In the abdomen, lies a fathomless treasure of knowledge, waiting to be discovered. In this clinical series, an attempt has been made to study the different lumps presenting in the right hyprochondrium. The lumps in the right hypochondrium may occur in connection with the many organs. In case of liver it can give rise to congenital Riedel's lobe, amoebic hepatitis and abscess in which ultrasonography is a highly reliable investigation.[1] Also includes suppurative pylephlebitis, suppurative cholangitis, gumma of the liver and hydatid cyst which commonly affects the liver in which right lobe is more commonly involved than the left.[2,3] Carcinoma of the liver which may be either primary or secondary as distinguished by Rokitansky in 1849.[4] There may be inflammatory, obstructive etiology or malignancy of extrahepatic biliary apparatus or sub phrenic abscess or carcinoma of pylorus of stomach or subacute perforation of peptic ulcer or diseases of hepatic flexure of colon which may be intussusceptions, hypertrophic tuberculosis, carcinoma of colon in which a

right upper quadrant mass was found in 2.54% of cases studied by Barton.[5] There may be involvement of right kidney which may include hydronephrosis due to partial or intermittent obstruction to the outflow of urine.[6] It Also includes pyonephrosis which is the end stage of an obstructed and infected kidney or renal cell carcinoma which occurs most commonly in the fifth to sixth decade or renal malignancy like Wilm's tumour which is the most common solid renal tumor of children accounting roughly for 5% of childhood cancers.[7,8] Right hypochondriac mass may arise from right adrenal gland due to tumour like pheochromocytoma which has an increased predisposition for the right gland compared to the left.[9]

Besides knowing the anatomical details of this region, it is important for every surgeon to be aware of the typical and atypical presenting clinical features of each disorder. It is not enough to utilize your clinical features of each disorder. It is not enough to utilise your clinical skill on this region of the abdomen alone. An intelligent surgeon would never forget to make detailed survey of all the systems in every patient with such a lump. Apart from the diagnosis, various cost-effective investigative techniques have been assessed. With the aid of clinical data and investigations, a diagnosis was decided, and a detailed plan of treatment was chalked out.

In this clinical study of sixty patients, a comparative analysis was performed. The clinical presentation, diagnosis, minimal investigations and optimum treatment were studied in detail.

METHODS

Place of study was the cases for the present clinical study were taken from the Sassoon General Hospital, Pune. Type of study was the present study was a prospective observational study. Duration was carried out from March 2018 to October 2019.

Sample collection

Sixty cases (sample size) were studied. Out of sixty cases, 26.7% cases presented as a lump in the abdomen. The remaining lumps were found at the time of examination of patients.

Sampling methods

Consecutive patients who satisfied the inclusion criteria were taken up for the study.

Inclusion criteria

Patients presented as a lump in the abdomen to the department of general surgery of Sassoon hospital and were willing to be a part of the study were included.

Exclusion criteria

Cases of hepatomegaly due to medical condition were not included in this study.

After admission, a provisional diagnosis was made, with the help of a detailed history and through systemic and general examination of the patient. Relevant investigations were done. Various investigations included laboratory tests, radiological studies, tissue biopsies, fine needle aspiration cytology and histopathological examinations. Laboratory test including routine investigations, liver function test, renal function tests and relevant serological tests were done. Radiological studies included routine X-rays, intravenous urography, barium studies and intra-operative cholangiography. In all cases, ultrasonography was performed. CT scan abdomen and radioisotope uptake studies were performed in cases wherever indicated. Histopathological examination of the respective lumps was done after operation.

After all investigations, the final diagnosis was reached, and the clinical accuracy was assessed. The role of investigations in clinching the diagnosis was also studied. After discharge from the hospital, the patients were followed up.

Statistical methods

Calculation of data was done by using MS Excel (MS Office 365).

RESULTS

The data thus obtained was analysed for demographic parameters like age and sex, position of the lump in the abdomen whether it is intra or retro-peritoneal, extent of the lump, organ of origin, etiology whether it is congenital, infectious, malignancy or any other cause, main symptomatology at presentation, investigations done and it's diagnostic accuracy and finally modality of treatment given.

Table 1: Relation of lumps to the peritoneal cavity.

Site of lump	No. of patients	Percentage
Intraperitoneal	39	65*
Retro-peritoneal	21	35
Total	60	100

* Intra-peritoneal lumps were more common than retropertoneal lumps.

It was observed that the lumps in the right hypochondrium were most common in the 31-40 years age group in the present study and more common in males (57%). Intra-peritoneal lumps (65%) were more common than retroperitoneal lumps (Table 1). As much as (45%) of the lumps were involving either right lumbar or epigastric region in addition to the right hypochondriac region. Hepatic and renal lumps together accounted for

60 percent of the cases. Neoplastic lumps were the commonest lumps accounting for (45%). Amongst the malignant lumps, (28.6%) lumps were from the gall bladder. Though malignant lumps were more common (61.9%) in males, gall bladder malignancies were twice as common in females.

Only (26.7%) patients presented with the complaint of lump in abdomen. In the remaining cases, the patients came with other presenting complaints and the lumps were detected on physical examination by the clinician. The commonest complaints were pain in the abdomen followed by vomiting, lump in abdomen and abdominal distension (Table 3-5).

Barium meal was done only in the case of choledochal cyst and was found to help in the diagnosis of this case.

Table 2: Extent of lumps.

Region	No. of patients	Percentage
Exclusively in the right hypochondrium	33	55
Right hypochondrium and epigastric region	12	20
Right hypochondrium and right lumbar region	15	25
Total	60	100

Table 3: Aetiological classification of lumps.

Types of lumps		No. of patients	Total of each group	Percentage (group wise)
Congenital	Choledochal cast	2	6	10.0
	Hydronephrosis due to PUJ block	3		
	Pyonephrosis due to PUJ block	1		
Infections or infestations	Amoebic liver abscess	6	18	30.0
	Hydatid cyst of liver	8		
	Empyema due to cholelithiasis	2		
	Pyonephrosis due to renal tuberculosis	2		
Neoplasm	Liver	7	27	45.0*
	Gall bladder	6		
	Common bite duct	1		
	Pancreas	2		
	Right kidney	5		
	Right adrenal gland	4		
	Hepatic flexure of colon	2		
Miscellaneous	Cholelithiasis without empyema	5	9	15.0
	Renal calculi	4		
Total		60	60	100.0

*Neoplastic lumps were the commonest lumps accounting for 45 percent.

Table 4: Nature of malignant lumps.

	Type of lump	Male	Female	Total of each group	Percentage
Liver	Hepatoblastoma	1	--	3	14.3
	Hepatoma	1	--		
	Secondary	1	--		
	Metastatic				
	Carcinoma				
Gall bladder	Adenocarcinoma	2	4*	6	28.3
Common bile duct	Adenocarcinoma	--	1	1	4.8
Pancreas	Adenocarcinoma	2	--	2	9.5
Kidney	Renal cell carcinoma	2	1	5	23.8
	Wilm's tumor	1	1		
Adrenal	Adrenocortical	1	1	2	9.5
Hepatic flexure of colon	Adenocarcinoma	2	--	2	9.5
Total		13**	8	21	100.0

*Gall bladder malignancies- male<female, **Total male > total female.

Table 5: Symptomatology.

Abdominal lump	No. of patients	Percentage
Lump detected by patient	16	26.7
Lump detected on examination	44	73.3
Total	60	100.0

Table 6: Modality of treatment

Modality	No. of patients	Percentage
Surgical	53	88.3*
Non-surgical	7	11.7
Total	60	100.0

*In 88.3 percent cases surgery was undertaken for curative or palliative purposes

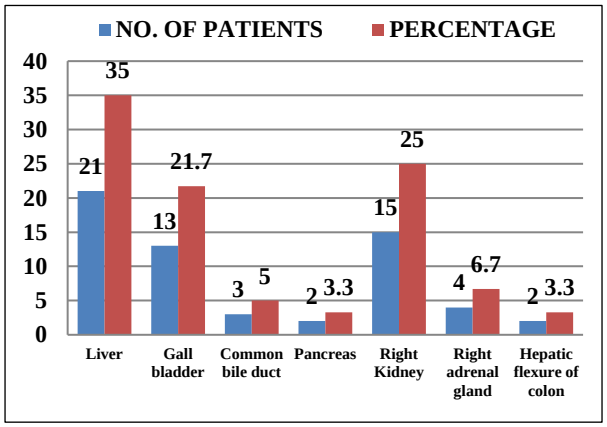

Figure 1: Anatomical origin of lumps.

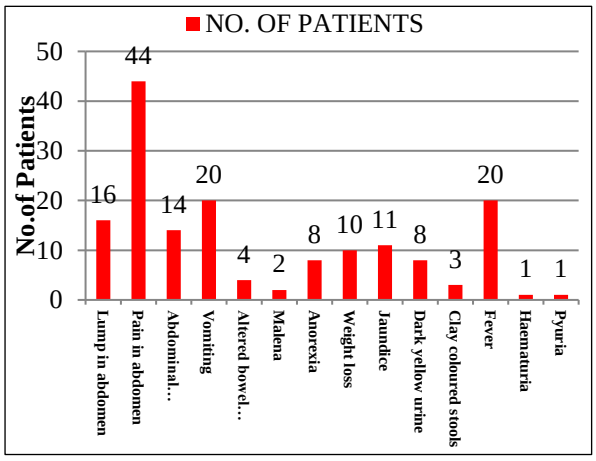

Figure 2: Analysis of presenting symptoms.

Radio-isotope scan was performed in a case of pyonephrosis to study the renal function in a kidney which was non-functioning on IVU. In another case of focal nodular hyperplasia, isotope uptake studies were done to study vascularity pattern of the tumor. An ultrasound examination was done in all the cases and its diagnostic accuracy was (83%). CT scan showed accuracy of 93.1%. In 88.3% cases surgery was undertaken for curative or palliative purposes (Table 6).

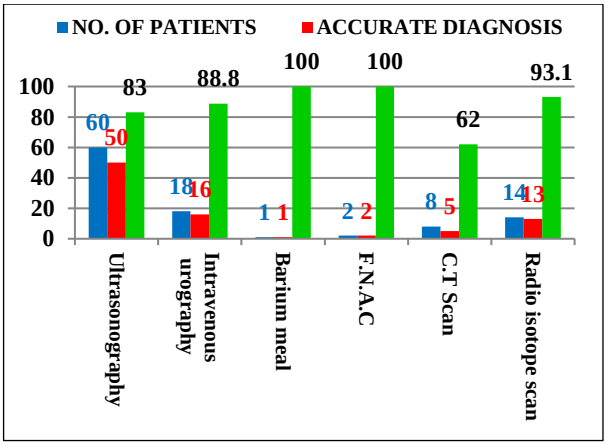

Figure 3: Investigations.

DISCUSSION

Lumps in the right hypochondrium have been studied in the different age of groups in the present research series. Sixty cases were studied prospectively.

Lumps originating from the organs situated in the region formed majority of these cases. 68.3% as compared to 31.7% of lumps had an organ of origin which was not anatomically situated in the right hypochondrium viz. from right kidney and right adrenal. Hepatic lumps were found to be the commonest (35%), of which 14.3% were malignant tumors. The next common group comprised of lumps arising from the right kidney (25%). The maximum incidence was found to be in the 31-40 years age group (27%), the male to female ratio being 1.33:1 (Figure 1). Due to the paucity of literature on comparative evaluations of various lumps, this clinical data could not be compared. Nevertheless, extensive studies have been conducted by various investigators about individual lumps. An attempt has been made here to compare experience with their findings.

In this series, majority of the lumps were found to be intraperitoneal (65%). 45% were neoplastic in nature. Of these neoplasms, malignant lumps were more common (77.7%). Carcinoma of the gall bladder was found to be the malignancy most commonly found (28.6%) in the right hypochonodrium. Malignant masses were more common in male patients (61.9%) with a notable exception. Malignancies of the gall bladder had a female predominance, the female to male ratio being 2:1. Among the present patient population studied, only 36.7% of the patients had detected the lumps themselves, whereas the majority were first found on clinical examination. Pain in the abdomen was the commonest complaint (44%) followed by vomiting. To confirm clinical diagnosis, an ultrasonography was diagnostic in 83%. With CT scan, the % age of accuracy was found to be 93.1% (Figure 3).

In this series amoebic liver abscesses contributed to 10% of all cases with male preponderance and pain in the right hypochondrium was the common symptom. Ochner published the largest series of hepatic abscesses in literature. In his series of 139 cases, amoebic liver abscesses accounted for 66.18% of all cases.[10]

Gall bladder carcinoma was more common in 40-60 years with female preponderance. Out of six cases three were associated with gall stones. Koo and Wong have reported that more than 90% of the patients with gall bladder malignancy have gallstones.[11] Which strongly suggest the important role of gall stones in etiology of gall bladder carcinoma.[12] Ultrasound missed the diagnosis in 3 cases. Hsu-Chang studied 14 cases of carcinoma of the gall bladder and the diagnosis was made by ultrasound in 84.6% cases.[13] Koo et al reported that at the time of exploration, 85% of patients with gall bladder cancer were unresectable.[11] In this series, only two (33.3%) cases were resectable, so the rate of unresectability is 66.7%.

Choledochal cyst is a rare abnormality; most of the cases are diagnosed before 10 years though age ranges from newborns to 78 years of age.[14] In this series, there were two cases of 9 and 27 years old patients admitted with jaundice and a lump in the right hypochondrium. Both of them underwent surgery with excision and hepatojejunostomy. In both cases the anomaly was type I.

Authors had 2 cases of carcinoma of head of the pancreas and a single case of carcinoma of the bile duct in the age group 45-60 years. Carcinoma of the bile duct is a rare lesion as reported by George et al with an incidence of 0.01%. In both cases of carcinoma of head of the pancreas, serum bilirubin levels were greater than 10 mg/dl.[15] Serum alkaline phosphatase was more than 75 K.A.U in one case. SGOT and SGPT levels were within normal range. CT scan gave the exact site of obstructive of the CBD in its lower third. Kiras polymerase chain reaction from pancreatic secretions is a valuable diagnostic procedure in an early stage of the disease.[16] Histological examination revealed adenocarcinoma in both cases. Cohen reported that the survival rate in these cases depends on the final pathological diagnosis.[17]

Melicow et al have reported that 20% of all abdominal masses were formed by hydronephrosis.[18] Kasper et al in their study, found that hydronephrosis is responsible for 40% of all urological abdominal masses.[19] In this series, three cases of hydronephrosis were found in whom the mass was reaching up to the right hypochondrium. Two of them were adult males from the 21-30 years age group. The third case was a 9-year-old female. All these three cases had PUJ block. In one case, IVU showed non-functioning kidney and nephrectomy was performed. In both the remaining cases, Anderson Hyne's pyeloplasty was done.

Pyonephrosis is the end stage of an obstructed and freely infected kidney. The main presenting complaints were flank pain, fever and a palpable renal lump. Androulakakis found palpable masses in 69% of cases in his study. Coleman reported the great accuracy of USG in diagnosis of pyonephrosis.[20] Ischiza et al have suggested that ultrasonography is the main screening as well as diagnostic procedure, in his study.[21] Intravenous urography is the most important investigation in the management of pyonephrosis.

Table 7: Comparison of etiology of pyoneophrosis with other studies.

Etiology of pyoneophrosis	Androulakakis[22] (%)	Present series (%)
Urolithiasis	70	52.2
Urinary tuberculosis	3	28.5
PUJ blockage	16	14.3

Wkakas studied 111 cases and found that primary nephrectomy was a satisfactory mode of treatment. However, staged management is favored by number of clinician as Lerin reviewed 23 confirmed cases of pyonephrosis initially treated by percutaneous nephrostomy (PCN).[23] In this series two patients were found to have end stage kidneys so primary nephrectomy was performed and were further investigated with nephrostogram and IVU. The three showed return of function and underwent corrective surgery. Patients who showed no return of function were treated by secondary nephrectomy.

Renal tumors account for approximately 2% of all cancer deaths. The frequency in males is twice that in females. Renal cell carcinoma occurs most commonly in the 5th to 6th decades and has a male to female ratio of 2:1. The average age of occurrence is 41 years in these series. The classical haematuria, flank pain and a palpative mass was seen in only one case. The mass in the flank was reaching up to the right hypochondrium. Wilms tumour is the most common solid renal tumor of childhood tumour, uncommon in adult life.[16] Authors studied 3-year-old female and 18 years old male patients. Richard of et al reported of wilm's tumor in 80 yr old patient. Radical nephrectomy was performed in both patients.[24] Histopathological examination was consistent with the diagnosis of Wilms' tumor. Prognosis is poor in cases of unfavorable histological subtypes associated with hematuria.[25,26] Authors studied a 40 years old patient of Pheochromocytoma with symptoms of headache, palpitations and abdominal pain. She had uncontrolled hypertension, hyperglycemia. Plasma catecholamines were raised. Plain X-ray abdomen revealed a radio opacity at the level of upper lumbar vertebra. CT scan was able to visualize well renal mass. Urinary VMA level was raised up to 40 ml/24 hour. Postoperatively the blood pressure was stabilized. On the fourth postoperative day urinary VMA was done which showed the normal value

of 4.2 mg/24 hours. Primary carcinoma of the adrenal cortex is a rare malignancy accounting for an estimated 0.2% of all cancers. Authors came across two cases of adrenal cortical carcinomas. CT scan was done but, failed to specify the origin of malignancy. Surgical resection was performed and a 18×15 cm sized tumor was excised. Radiotherapy and chemotherapy are effective palliation of local disease.

Metastatic neoplasms represent the most common malignant tumors of the liver. The relative proportion of primary to secondary neoplasms is estimated to be 1:20. A 60 years old male patient presented with a painless hard, nodular lump in the right hypochondrium. He also gave history of anorexia and weight loss. Barium meal showed the primary to be in the stomach. Palliative bypass was performed. Secondary involvement of the liver in primary gastric carcinoma is well known.

CONCLUSION

The most common age incidence was found in the 31-40 years category with a definite male predominance. Most lumps in this study were detected on clinical examination by the surgeon (73.3%) compared to lumps detected by patients themselves. The commonest symptom observed was abdominal pain followed by vomiting. Of all the lumps in the right hypochondrium, intraperitoneal lumps were more common than retroperitoneal. Masses from other abdominal quadrants may present as lumps in the right hypochondrium e.g. right adrenal tumors. The commonest lumps were found to be hepatic lumps (35%) followed by renal lumps. Neoplastic masses were the commonest followed by lumps due to infections and infestations. Of all the neoplasms, malignant tumor formed the majority of tumors being more common in males. The gall bladder malignancies accounted for the largest group of malignancies with a characteristic female predominance. Ultrasonography was used as a diagnostic aid in all patients with an accuracy of 83%. CT scans done only when indicated provided a diagnostic accuracy of 93.1%. Majority of the patients in this series underwent surgical treatment (88.3%). Of all the operated cases, in 92.45% of patients, the tissue diagnosis confirmed the pre-operative diagnosis.

ACKNOWLEDGEMENTS

Authors would like to thank his family and Department of General Surgery, Dr. D. Y. Patil Hospital and Research Centre, Pimpri for their valuable support during study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Jayakar SR, Male PV, Save MM, Shetty VS. A prospective study of the lumps in the right hypochondrium. Int Surg J 2020;7:757-63.