

Study of Clinicopathological Correlation of An Abdominal Lump

Rutik Gandhi¹, Ohang Chaudhari²

Author's Affiliation: ¹Resident, ²Assistant Professor, Department of Surgery, Smt B K Shah Medical Institute & Research Centre, Vadodara, Gujarat 391760, India.

How to cite this article:

Rutik Gandhi, Ohang Chaudhari, Study of Clinicopathological Correlation of An Abdominal Lump. New Indian J Surg. 2020;11(3):353–358.

Abstract

Introduction: Evaluation of abdominal lump may pose difficulty in surgical practice. In a basic anatomic approach, the abdomen is separated into 9 regions of epigastric, umbilical, hypogastric, right hypochondriac, right lumbar, right iliac, left hypochondriac, left lumbar, left iliac. As abdominal lumps are seen in widely varying range it is not correct to group them under a single diagnostic category. Therefore, to diagnose an abdominal lump step wise evaluation is required in the form of clinical, radiological and histopathological evaluation.

Materials and Methods: This study included patients presenting with palpable abdominal lump. Complete detailed history and clinical examination were taken prior to any investigation to find out possible clinical diagnosis. Radiological investigations were done to support the clinical diagnosis. After which laparotomy was performed and excised specimen was sent for histopathological examination to reach the final diagnosis.

Results: 60 cases with abdominal lump were included in the study depending on inclusion and exclusion criteria. Male to Female ratio was 1:1.4. The mean age was 43.77 ± 12.92 . Right iliac region was the most involved quadrant (25%). Most of these lumps were gastrointestinal in origin (30%). Clinical examination in total had accuracy of 96.67% which was similar to Radiological investigation. Most of the cases were non neoplastic (56.67%) and out of neoplastic cases (43.33%), around 14(54%) cases were benign and 12 (46%) were malignant.

Conclusion: Most of the cases of abdominal lump can be well evaluated clinically in terms of the diagnosis and organ of the origin. Both clinical examination and radiological investigation have equal sensitivity as far as organ of origin is concern. Histological diagnosis which is confirmatory helps to distinguish between neoplastic and nonneoplastic lesions and is vital for patient management.

Keywords: Abdominal lump; Clinicopathological correlation; Clinical diagnosis; USG; CT; MRI; neoplastic non-neoplastic; Histopathological diagnosis.

Introduction

An intra abdominal lump is an enigma in the surgical practice. A documentary evidence of the nature of the pathology before the institution of therapy and also for prognosis is mandatory.¹ A Lump is a vague mass of body tissue. A person with an abdominal lump may notice an area of swelling or a bulge that protrudes from the abdominal area. Possible causes include lesions of the liver, spleen, pancreas, stomach, gall bladder, the small and large intestines, the omentum, mesentery, the retroperitoneum, kidney, adrenals, lymph nodes, soft tissues and the ovaries.² It most often feels soft, but it may be firm depending on its underlying cause. It is a challenging diagnostic problem since it includes spectrum of lesions of diverse origin and significance.³

The abdominal cavity is divided into regions for purposes of study, diagnosis, and therapy.³

Depending upon the abdominal anatomy location of the various abdominal masses could be present in the following regions.^{4,5}

Corresponding Author: Ohang Chaudhari, Assistant Professor, Department of Surgery, Smt B K Shah Medical Institute and Research Centre, Vadodara, Gujarat 391760, India.

E-mail: dr.runkigandhi@gmail.com

1. *The abdominal wall:*

- Skin
- Subcutaneous tissue
- Fascia and muscle–Rectus hematoma, Lipoma, Abdominal wall tumors
- Hernia

2. *Intra- and retroperitoneal masses:*

- Situs inversus
- Partial malrotation of the gut

3. *Right upper quadrant*

- Liver
- Gallbladder
- Right kidney
- Hepatic flexura of the colon
- Stomach and duodenum
- Head of the pancreas
- Retroperitoneal nodes
- Right adrenal gland

4. *The epigastrium*

- Liver
- Body of the pancreas
- Stomach
- Colon (Transverse)
- Retroperitoneal tumors

5. *Left upper quadrant*

- Asymptomatic Kidney,
- Spleen,
- Other structures like Left lobe of the liver, Splenic flexure of the colon, Adrenal gland,
- Other retroperitoneal tumors.

6. *Right Lower Quadrant*

- Cecum
- Ovary
- Appendix
- Small intestine
- Mesentery
- Omentum
- Retroperitoneal tumors

7. *Left lower quadrant*

- Descending sigmoid colon

- Ovary
- Small intestine
- Mesentery
- Omentum
- Retroperitoneal masses

8. *Suprapubic Mass*

- Bladder
- Uterus
- Small intestine, colon, ovary, omentum

9. *Generalized Abdominal swelling*

- Bowel obstruction
- Ascites
- Big cysts of ovary

For proper diagnosis of abdominal lump there is requirement of combination of clinical, radiological and pathological investigations. A detailed clinical examination plays important role in the diagnosis. Many abdominal lumps are discovered incidentally during routine physical examination.⁶

With the increase in the degree of specialization, abdominal surgery is one of the main pre-occupations of the general surgeon. It is well known that abdomen is a 'mystery box' till the lid is opened at the laparotomy. Intra-abdominal lumps always pose a challenge to the clinician skills of the best surgeon. The etiology of the lump could be widely different. The palpable lump may be a normal organ or at the other end, especially with regards to neoplasia, may be indicative of fairly advanced disease.⁷ It is very important to evaluate any abdominal lump thoroughly preoperatively because rush to intervene surgically without proper evaluation and diagnosis are not in the best interest of the patient.

Histopathological examination is the final diagnostic test for abdominal lump which is used to characterize the cells present in the lump which may be benign or malignant.⁸

Material and Methods

Source of Data

All eligible patients presenting with abdominal lump in Department of general surgery, in tertiary care centre under rural setting during the study period from the date of approval of study.

Study Design: Observational study

Study Site: Department of General Surgery,

Tertiary care centre under rural setting.

Selection Criteria

All the patients coming to the outpatient department were referred to or admitted under the department of general Surgery with complains of abdominal lump. Total of 104 patients were examined with the complain of abdominal lump. Out of which 60 were selected depending upon the inclusion and exclusion criteria. Inclusion Criteria

1. Patient presenting with palpable abdominal lump 2. Patient older than 18 years. 3. Individuals who voluntarily decide to take part in this study and give written consent.

Exclusion Criteria

1. Patient not willing for study. 2. Patient unfit for surgery. 3. Lump not requiring operative exploration.

Sample Size

60 patients were included in the study according to finite population correction.

Study Method

On admission, detailed explanation about my study was explained to the patients and consent for the study has been taken from all the study subjects. According to the departmental protocol stepwise approach to reach the diagnosis will be done. In this approach first clinical examination was done followed by radiological investigations. Patients were explained about the need of surgery and the need of histopathological examination to help to diagnose and cure the disease.

History was collected and thorough physical examination was done. Data collection on admission including age, address and clinical presentation with respect to site of the abdominal lump and its progression, duration, nature of the pain associated with it alongwith vomiting, nausea, changes in bowel habit, association of pain with meals, fever, weight loss, bleeding per rectally, loss of appetite, hematuria and other urinary complains were taken into the consideration.

History of previous episodes and co-morbidities were noted. Family history for similar complains were extracted.

Clinical examination of abdomen was done with respect to lump - size, shape, surface, situation, extent, movement with respiration, reducibility/compressibility were also noted. Per rectal examination was done to rule out any palpable mass. After clinical evaluation provisional diagnosis was made.

Routine investigations like complete hemogram,

Blood urea, Random blood sugar, Serum electrolytes and Serology were carried out. Tumour markers whenever required were studied. Ultra sonography of abdomen and pelvis were done as the primary investigation. X-ray abdomen standing was also be done whenever required. Further CECT Abdomen or CT-IVP were done if a diagnosis cannot be ruled out with the preliminary investigation.

After surgery, the excised lump was sent for histopathological examination and later the final diagnosis was formulated. Data like clinical symptoms, results of pathological investigations were collected.

Results and Discussion

Abdominal lumps include several different pathological lesions with benign or malignant properties, solid or cystic and which can be different according to age, gender, localization and organ or tissue of origin.

For a diagnosis of pathology with so many different properties, systematic evaluation is necessary for the application of correct treatment. Knowledge of the different pathologies causing abdominal lumps and the diagnostic and treatment approaches to these is of particular importance. The process of diagnosis of an intra-abdominal mass starts with a detailed history and physical examination. These two steps form the basis of the preliminary diagnosis and differential diagnosis by which the causes of the intra-abdominal mass will be determined⁹.

The patient was asked in detail about symptoms, time since onset, additional gastrointestinal symptoms, known diseases, family history, previous operations and trauma history.

The aim of the study was to reach towards the accurate diagnosis in cases of abdominal lumps in terms of clinical examination, radiological investigations and histopathological investigations.

Table 1: Mean Age comparison.

Mean Age	Present Study	Garg et. al. ¹⁰	Akkoca et. al. ¹¹
Mean Age	43.77	45	54.3

In our study, average age of the patient being 43.77 years, which was in accordance to the study done by Garg et. al.¹⁰. Most of the Indian population is of working age group who are laborer class thus present at this age group with disease.

Table 2: Gender comparison.

Gender	Present Study	Akkoca et. al. ¹¹
Male	25	18
Female	35	27

There was Female predominance in present as well as Akkoca et. al.¹¹ Study.

Female population in India are housewife and illiterate and belonging to lower socioeconomic status thus neglect their health and presents late with abdominal lump neglecting early symptoms.

Table 3: Comparison of Clinical Presentation.

Clinical Feature	Present Study	Garg et. al. ¹⁰
Pain	88.33%	98.33%
Vomiting	45.00%	55.00%
Fever	65.00%	78.33%
Weight Loss	36.67%	36.67%
Bleeding P/R	15.00%	30%
Bleeding P/V	20.00%	34%
Urinary Complaints	33.33%	42%

Symptomatology was taken into the consideration which included Pain, Vomiting, Fever, Weight Loss, Bleeding P/R, Bleeding P/V, Urinary Complaints. In our study it was observed that the most common presenting symptom was pain followed by fever, vomiting, weight loss, urinary complaints, bleeding P/V, bleeding P/R. Garg S et. al.¹⁰ conducted studies on abdominal lump cases in which total 102 consecutive patients were studied with various clinical symptoms and most common was abdominal pain. Similar results were seen in the study done by Akkoca M et. al.¹¹.

Most of the patients are working group and present to hospital when their pain is not relived by medications (analgesics) or present when there is significant weight loss, fever and vomiting after lump formation as the underlying disease has already progressed.

Clinical examination of a case of abdominal lump is a very strong pointer toward the organ of origin and the probable pathology.

The abdomen is divided into 9 regions those are Epigastric region, Umbilical region, Hypogastric region, Left Hypochondriac region, Left Lumbar region, Left Iliac region, Right Hypochondriac region, Right Lumbar region and Right Iliac region¹⁰. In our study of 60 patients the most common location of abdominal lump was observed in the right iliac fossa (25%) with least common location was found to be in the umbilical region (3.33%).

The location of the mass in the abdomen gives a clue about the possible organ through which it may arise.

The size of the abdominal lump is an important factor which helps in making a clinical diagnosis. As in present study most of the population approaches late with huge abdominal lump. Shape of abdominal lump also helps in making a diagnosis.

The mobility of an abdominal lump helps to understand the fixity of the mass to the underlying structures.

The consistency helps to determine whether the mass is soft, firm, cystic, hard, hence helps to make a clinical diagnosis. The size, shape, mobility, consistency of abdominal lump on palpation are important to guide to make a clinical diagnosis. Depending upon all the above clinical features the clinical diagnosis was formulated.

Table 4: Comparison of Organ of Origin.

Organ of Origin	Present Study	Chandak UA et. al. ¹²
Gi	30	33.34
Kidney	18.33	16.66
Liver	10	25
Ovary	18.33	–
Pancreas	8.33	16.66
Spleen	6.66	8.34
Uterus	8.33	–

In the study done by Garg S et. al.¹⁰, Analysis of organ/site wise distribution of abdominal lesions were done and majority of cases were from liver 32(31.3%) followed by gall bladder 17(16.6%), whereas according to Chandak UA et. al.¹² the gastrointestinal system was most commonly affected i.e. 33.34% which is in accordance with our study.

Study population were from lower socioeconomic status thus improper diet leads to various gastric problems, also lower intake of water, unhygienic water and alcohol intake leads to renal and liver diseases therefore presents with GI/kidney and liver lump respectively.

Table 5: Comparison of Sensitivity of Radiological Modality:

Radiological Modality	Present Study	Williams MP et. al. ¹³	Dixon AK et. al. ¹⁴	Aspelin P et. al. ¹⁵
USG	98%	93.34%	96.73%	96.21%
CT SCAN	99.9%	98.34%	99.32%	98.97%

Also in present study there is female preponderance who uses unhygienic cloth during menses and also neglect early symptoms such as burning micturation and presents with hypochondriac lump.

Though clinical examination forms a very strong tool in diagnosing abdominal Lumps, radiological investigations form a strong support in confirming the clinical diagnosis. Abdominal USG is the important imaging modality, especially if a gastrointestinal origin is not suspected³². USG helps differentiate retroperitoneal from intraperitoneal masses and solid from cystic masses. USG is the initial imaging modality of choice¹³. USG sensitivity ranges from 98% in present study to 93.34% in WilliamsMP et. al.¹³, 96.73% in Dixon AK et. al.¹⁴, Aspelin P et. al.¹⁵. USG is observer based and thus sensitivity differs Computerized tomography (CT) is an excellent cross-sectional imaging technique in abdominal masses due to the explicit anatomical details. It helps assess the exact size and extent of the mass, thereby allowing accurate staging. MRI, especially with the advent of short scan time and open type magnets, is a very promising modality¹⁶. Depending on the requirement of the case the radiological modalities were used for the investigation such as USG, CT scan and MRI¹⁶.

We were able to pick up the anatomical organ of origin on clinical examination correctly in 58 cases and were incorrect only in two cases of mesenteric cyst and one of the Ca colon case.

On histopathological examination, most of the excised lumps were Non- Neoplastic in our study. Out of 60 patients 26 patients were diagnosed to be Neoplastic and 34 were Non-Neoplastic From the 26 cases of neoplastic 14 were diagnosed to be benign (54%) and 12 were malignant (46%).

Table 6: Comparison of Neoplastic and Non Neoplastic Lump.

Type of Lump		Present Study
Neoplastic	Benign	23.33%
	Malignant	20%
Non Neoplastic		56.6%

Evaluation of abdominal lumps may pose difficulty in surgical practice. Distinction between neoplastic and non-neoplastic lesions is vital for patient's management.¹¹ Clinical presentation associated with malignancy can be misleading at times. Use of imaging techniques alone may fail to allow distinction between neoplastic and non-neoplastic lesions on the basis of morphological features. Hence, histopathological investigations stands gold standard for the final diagnosis.

Conclusion

Clinical examination of abdominal lumps was done in 60 patients to assess the diagnostic efficacy.

In our study, average age of the patient was 43.77 years.

There was Female predominance.

Symptomatology was taken into the consideration which included Pain, Vomiting, Fever, Weight Loss, Bleeding P/R, Bleeding P/V, Urinary Complaints. In our study it was observed that the most common presenting symptom was pain followed by fever, vomiting, weight loss, urinary complaints, bleeding P/V, bleeding P/R.

The abdomen is divided into 9 regions those are Epigastric region, Umbilical region, Hypogastric region, Left Hypochondriac region, Left Lumbar region, Left Iliac region, Right Hypochondriac region, Right Lumbar region and Right Iliac region⁹. In our study of 60 patients the most common location of abdominal lump was observed in the right iliac fossa (25%) with least common location was found to be in the umbilical region (3.33%).

The gastrointestinal system was most commonly affected i.e. 33.34% in our study.

Though clinical examination forms a very strong tool in diagnosing abdominal Lumps, radiological investigations form a strong support in confirming the clinical diagnosis. Abdominal USG is the important imaging modality, especially if a gastrointestinal origin is not suspected. We were able to pick up the anatomical organ of origin on clinical examination correctly in 58 cases and were incorrect only in two cases of mesenteric cyst and one of the Ca colon case.

On histopathological examination, most of the excised lumps were Non-Neoplastic in our study. Out of 60 patients 26 patients were diagnosed to be Neoplastic and 34 were Non-Neoplastic. From the 26 cases of neoplastic 14 were diagnosed to be benign (54%) and 12 were malignant (46%).

Along with the distribution of Neoplastic and Non-Neoplastic cases Histopathology reports have eventually confirmed the diagnosis which was given by radiological investigations in a very specific manner.

To conclude, as abdominal lump originate from different organs being GI origin most common. Symptomatology plays key role and most commonly presenting symptom was pain associated with abdominal lump. Both clinical examination and radiological investigation have equal sensitivity as per organ of origin is concern. It was also observed that there was good correlation between radiological and histopathological diagnosis but in few cases histopathological diagnosis was found to

be more specific and remains the gold standard in most of the cases.

References

1. Sidhalingareddy. Andola SK. Fine needle aspiration cytology of intra-abdominal lesions. *J of clinical and Diagnostic Research* 2011 August;5(4):758-765.
2. Hemalatha.AL, Sindhuram.SV,Sushma S,Suma JK,Varna.I et. al.; Ultrasound guided FNAC of abdominal-pelvic masses -The pathologists' perspective. *J clinical and Diagnostic Research* 2013 February;7(2):273-277.
3. Gupta S, Meena D, Meena GL. Tumors and Beyond: an Array of Abdominal Masses in Children.
4. Borley NR, Standing S. *Gray's anatomy: the anatomical basis of clinical practice*. Edinburgh: Churchill Livingstone.2008.
5. Moore KL, Dalley AF, editors. *Clinically oriented anatomy*. 5th ed. Philadelphia: Lippincott, Williams and Wilkins; 2006. pp.196-8.
6. American College of Surgeons ACS Surgery Principal and Practice. Abdominal masses, p 488-500,2012.
7. Barnes SA, Lillemoe KD. Liver abscess and hydatid cyst disease. In: Zinner MJ, Schwartz SI, Ellis H, editors. *Maingot's Abdominal Operations*. 10th ed. Stamford, Conn: Appleton and Lange; 1997. pp. 1513-1545.
8. Bernstein CN, Fried M, Krabshuis JH, Cohen H, Eliakim R, Fedail S, Geary R, Goh KL, Hamid S, Khan AG, LeMair AW. *World Gastroenterology Organization Practice Guidelines for the diagnosis*.
9. Swartz MH: *Textbook of Physical Diagnosis: History and examination*, 5th ed. Saunders Elsevier, Philadelphia, 2006, p479.
10. Garg S, Bansal R, Grover S, Verma S, Gupta M, Verma S. Clinicopathological Correlation of Abdominal Lesions for Assessment of Diagnostic Efficacy of Minimally Invasive Techniques. *National Journal of Laboratory Medicine*. October 2016;5(4):1-7.
11. Akkoca M, Tokgöz S, Yılmaz KB, Akıncı M, Yılmaz D. Diagnosis and Treatment Approaches for Intraabdominal Masses in Adults. *Imaging*;17(62):2.
12. Chandak UA, Chavan C, Mitra A, Tamgadge L, Mrunmyi D, Gore S et. al. A study of abdominal lumps, diagnostic evaluation and operative correlation. *International Journal of Recent Trends in Science and Technology*. January 2016; 17(3):226-229.
13. Williams MP, Scott IK, Dixon AK. Computed tomography in 101 patients with a palpable abdominal mass. *Clin Radiol* 1984; 35(4):293-296.2.
14. Dixon AK, Fry IK, Kingham JG, McLean AM, White EE. Computed tomography in patients with an abdominal mass: effective and efficient? A controlled trial. *Lancet* 1981; 1(8231):1199-1201.3.
15. Aspelin P, Hildell J, Karlsson S, Sigurjonson S. Ultrasonic evaluation of palpable abdominal masses. *Acta Chir Scand* 1980; 146(7):501-506.4.
16. Fei Miao, Ming-Liang, and Yong. New progress in CT and MRI examination and diagnosis of small intestinal tumors. *World J Gastrointest Oncol*. 2010 May 15;2(5):222-228