



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2019; 5(4): 73-75
www.allresearchjournal.com
Received: 05-02-2019
Accepted: 06-03-2019

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Ultrasound guided biopsy of omental deposits and its correlation with histopathological examination at tertiary care center in eastern India

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Abstract

On ultrasound, omentum may be present as discrete nodules or a substantial omental cake. Omental cake appears as a solid mass with a free caudal margin located beneath the parietal peritoneum. The omentum is a common site for neoplastic disease like ovarian, gastrointestinal, pancreatic, and non-neoplastic processes including granulomatous disease. A retrospective study of 50 patients in which all omental biopsies performed under USG guidance in the Department of Radiodiagnosis from September 2017 to August 2018 at IMS & SUM Hospital, Bhubaneswar were reviewed in this study. Out of these, 28 patients (56%) were diagnosed to have malignancies, 15 patients (30%) had granulomatous inflammation either suggestive or conclusive with tuberculosis, 7 (14%) had an inadequate sample for histopathological examination. A thickened omentum can serve as an easily accessible site for biopsy, especially in patients who have ascites of unknown etiology and in those with a history of previous malignancy.

Keywords: Omentum, Ultrasound, Biopsy

Introduction

The greater omentum is the largest of the peritoneal folds. A small amount of fluid is present in the peritoneal cavity leading to easy spread of infections and malignancy to the omentum [1]. The most common malignancies to spread along the peritoneum are from gastrointestinal tract and ovaries. Granulomatous inflammation, infections and hematoma can also affect omentum. An omental mass in a patient with a known primary malignancy usually indicates metastasis [2]. A biopsy is necessary to confirm the diagnosis before treatment and exclude the possibility of a benign cause or presence of a second primary tumour.

The thickened omentum (>10mm) is easily accessible and differentiated from bowel on real-time USG, thus, an omental biopsy can be readily performed under USG guidance. On US, omental cake appears as a solid mass with a free caudal margin located beneath the parietal peritoneum. It may have variable echogenicity and appear hypo-isoechoic/ hyper-isoechoic or slightly hyperechoic. Omental cake often has mass effect and displaces the bowel from the anterior abdominal wall. Biopsy of the omentum is an option if the omental disease is more amenable than a pelvic mass, or no abdominal or pelvic primary lesion is present or identifiable on imaging. Omental biopsy has been shown to be an effective and important method in diagnosing ascites of unknown cause. In general, core biopsies are preferred over fine needle aspiration, due to the larger tissue sample enabling better immunohistochemical analysis.

Materials and Methods

The purpose of this study was to assess the utility and diagnostic value of USG guidance for biopsy of a thickened omentum and its correlation with histopathological examination. A retrospective study of 50 patients in which all omental biopsies performed under USG guidance from September 2017 to August 2018 at IMS & SUM Hospital were reviewed. 18 G biopsy gun is used for omental biopsy from thickened omentum under USG guidance. Adequate quantity of tissue for diagnosis may be obtained with this needle size. Prerequisites for omental biopsy are relevant history and examination, ultrasound abdomen to assess omental thickness and feasibility of biopsy, hemogram and haematocrit, PT/INR, Triple H.

Procedure

Informed consent of the patient should be taken. Patient should be in supine position. Local anaesthesia with 1-2% lignocaine from the skin down to the thickened omentum is given. With USG guidance, the omentum was assessed to identify the site of maximum thickening. Precaution was taken to see that there were no blood vessels in the expected needle path using color doppler. Stab incision were occasionally needed to ease biopsy gun entry. Biopsy gun was advanced to the thickened omental site under USG guidance making sure visualisation of the entire needle path. The patient is instructed to take a deep breath and hold to minimize injury to the omentum and then fire the biopsy gun. Care was taken to see that approximate 2.5cm of thickened omental tissue is there in line of biopsy gun firing track. 2-3 cores were taken from the site of easily accessible thickened omentum. Sampling was done and specimen was preserved in NS and formalin. Full palm compression on biopsy gun entry site is given for 2-5 minutes to minimize local oozing. The biopsy specimen was sent for

histopathological examination. Postprocedural USG was performed to look for any complication.

Results

During the study, out of 50 patients who had undergone USG-guided omental biopsy, 33 were male and 17 were female.

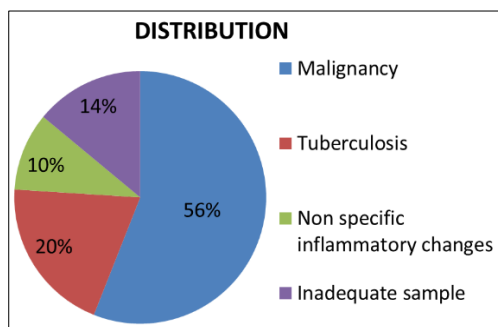
Table 1: Percentage of gender participated in the study

Sex	Frequency	Percentage
Male	33	66%
Female	17	34%

43 patients had sufficient material with 28 (56%) malignancy outcome and 15 patients (30%) had benign pathologies. Rest 7 patients (14%) had sample demonstrating scanty fatty tissue elements with some granulation tissue where any definitive histological opinion could not be made.

Table 2: Number of diagnosed cases with respect to histopathological reports

Diagnosis On Histopathological Correlation	No. of Patients
Ovarian serous cystadenocarcinoma	5
Ovarian mucinous cystadenocarcinoma	2
Ovarian papillary cystadenocarcinoma	2
Ovarian low grade endometroid carcinoma	1
Ovarian undifferentiated carcinoma	2
Metastatic adenocarcinoma (gastric & colonic)	7
Metastatic from Ca GB and cholangiocarcinoma	7
Metastatic from endometrial carcinoma	1
Lymphoma	1
Tubercular	10
Non-specific inflammatory changes	5



Graph 1: Diagram showing the distribution of pathology of the omental biopsies

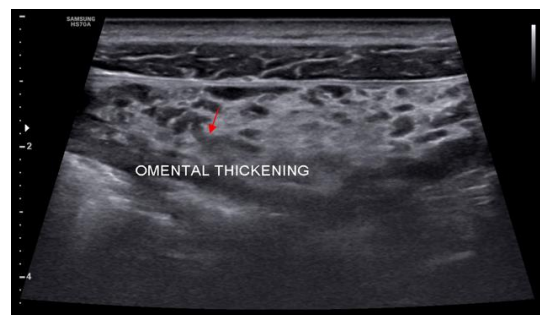


Fig 1: USG image in a patient showing omental thickening

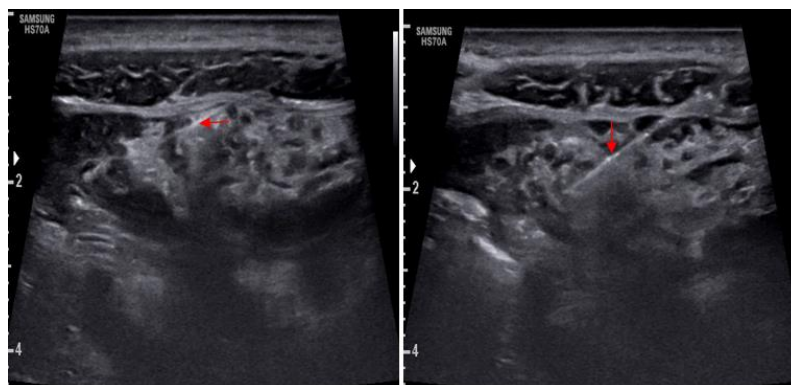


Fig 2: USG image showing path of needle of biopsy gun within the thickened omentum, on histopathological correlation diagnosed with features of ileocolic thickening.

Discussion

The peritoneum is the largest serous membrane in the body with the most complex structure. The peritoneal reflections form the greater and lesser omentum which are double layered extensions of the peritoneum that connect stomach to adjacent organs. Omental thickening is usually an indicator of an abdominal pathology such as malignancy or granulomatous inflammation (Fig 1 and 2). The omentum is involved when tumour cells seed into it via intraperitoneal dissemination along with peritoneal reflections [3].

Metastatic involvement is the most common cause of omental thickening. Alongwith peritoneal fluid and peritoneal thickening with enhancement, omental involvement is a frequently encountered finding with peritoneal carcinomatosis on CT. In tuberculosis, the omentum is involved by hematogeneous spread from lungs, lymphatics or direct spread. Tuberculous peritonitis features includes mesenteric macronodules, irregularity of infiltrated omentum and/or splenomegaly. USG - guided biopsy is gaining widespread acceptance since it is safe and effective method for assessment of omental lesions.

Conclusion

USG-guided biopsy of the omentum is a safe and effective procedure. Excellent accuracy with USG-guided omental biopsies was obtained. The majority of biopsies had sufficient tissue for histological analysis, independent of gauge of biopsy needle or number of passes. A thickened omentum can serve as an easily accessible site for biopsy, especially in patients who have ascites of unknown etiology and in those with a history of previous malignancy. Along with ovarian carcinoma, other malignancies from primary sites like stomach, colon and pancreas can also produce omental thickening. Malignancy is the most common etiology of omental thickening, numerous benign causes exist as well. The wide spectrum of histological neoplastic subtypes diagnosed on omental biopsy reinforces the need for tissue diagnosis prior to managment planning and commencing neoadjuvant chemotherapy.

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