

Meig's Syndrome with an Elevated CA125 in a 15-Year-Old Girl

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ABSTRACT

Background: An increased CA 125 in conjunction with a pelvic mass is, although, strongly indicative of ovarian cancer, there are a number of other benign diseases that may be linked to a pelvic mass and a higher CA 125.

Meigs syndrome is an uncommon condition in women under the age of 30. It consists of a triad of benign fibrous ovarian tumors, ascites, and pleural effusion. When the tumor is removed, the symptoms got resolve completely within two weeks.

Case Presentation: It is a case of a 15-year-old girl with fibroma, along with a review of the literature. Although the cause of the fluid accumulations is unknown, it seems to be linked to lymphatic blockage. Abdominal distension, pain, cough, pleuritic chest pain, vomiting, fever, and weight loss are all presenting symptoms.

Conclusion: This case report concludes that although a pelvic mass with elevated CA 125 is strongly indicative of malignancy, other illnesses, particularly Meigs syndrome and pseudo-Meigs syndrome in young women presenting with a pleural effusion, should always be evaluated as a differential diagnosis. The fluid buildup typically disappears within two weeks of the tumor being removed.

Keywords

Meig's syndrome, Elevated CA-125, Meig's in teenager, CA-125, 15 years old with raised CA-125.

Background

Although a pelvic mass with an elevated CA 125 level is highly suggestive of ovarian cancer, there are a number of benign diseases that may mirror the aforementioned symptoms, particularly in premenopausal women.

Case Presentation

A 15-year-old girl was brought to another hospital with abdominal pain, distention, and weight loss for 4 months.

She had taken antibiotics a year before for a cough, fever, chills, and chest discomfort. At the time, an examination showed left

lower lobe rales, prompting a diagnosis of pneumonitis. The symptoms were resolved with antibiotic treatment after a chest x-ray was taken: The rest of the patient's previous medical history was normal.

Menarche had happened at the age of thirteen, and periods had been consistent. The patient's family and social backgrounds were unremarkable, and she was not taking any medications.

On physical examination, a slim young lady was lying in bed in no distress. The vital indicators were all within normal limits. At the left lung base, there was a region of percussion that was dull. The percussion was low, and breath sounds were reduced to the base of the left lung area. A palpable lump extending to the umbilicus was discovered during an abdominal examination.

A moderate amount of ascites with septations and loculations were detected by ultrasonography (Figure 1) of the abdomen and pelvis. One large loculation was seen anterior to lesser sac compressing the stomach; other structures were unremarkable.

A chest X-ray revealed the presence of a left-sided pleural effusion. Thoracentesis of the left lung, as well as abdominocentesis, yielded no evidence of malignancy noted on cytology review.

Gram stain, acid-fast stains, and PCR (Figure 2) all were reported as negative for mycobacterium tuberculosis. Viral serology also came negative for HBsAg, HCV, and Anti HIV I and II (Figure 3). All tumor markers were within normal ranges except for CA-125

(Figure 4), which were 159 U/ml (normal range less than 21 U/ml).

Ascetic fluid analysis (Figure 5) showed straw fluid with clot having 2161 U/l LDH, 3.9 g/dl protein, and 1.2 g/dl albumin while glucose was less than 5 mg/dl. Differential cell count showed 83% Neutrophils and 17% lymphocytes. Cytological examination of cytospin preparations showed degenerated cells. In addition, inflammatory cells comprising predominantly neutrophils were seen, whereas no atypical cells or micro-organisms were noted.

The patient was taken to the hospital and admitted in Jinnah Hospital Lahore, Pakistan, where she underwent an exploratory laparotomy (Figure 6) with a midline incision under general anesthesia. Adhesions were found and broken.

Munammad Ali Malik
MBBS, MCPS, FCPS
TAYYAB HOSPITAL

Patient Name: Mahnoor	Sex/Age: F / 15 Yrs	Date: 05-Jul-2021
Ref. Physician: Dr Tayyab Husnain Awan Sb	Page: 1	RecNo: 1004236
Clinical Data: Abdominal Distention		

ULTRASOUND ABDOMEN

Liver
It is enlarged in size measuring 17.8 cm. Its shape and echotexture are normal. Its margins are smooth. Portal vein diameter is normal. No mass, cyst or collection seen in the liver.

Gall Bladder
It has smooth lining and normal thickness walls. No calculus seen in it. No sludge noted. Intra and extra hepatic bile ducts and CBD are not dilated.

Pancreas
It is normal in shape, size and echotexture. No mass, cyst or collection seen in it. Pancreatic duct is normal.

Spleen
It has normal size. Its shape and echotexture are normal. No focal or diffuse lesion seen.

Rt. Kidney
It has length of 10.5 cm and cortical thickness 0.8 cm. Parenchymal echogenicity is normal with intact corticomedullary distinction. No calculus seen in renal area. Pelvicalyceal system is not dilated. No mass or cyst noted.

Lt. Kidney
It has length of 9.5 cm and cortical thickness 0.9 cm. Parenchymal echogenicity is normal with intact corticomedullary distinction. No calculus seen in renal area. Pelvicalyceal system is not dilated. No mass or cyst noted.

U. Bladder
It is adequately filled and well outlined. Its walls are smooth with no thickening or mass seen. No calculus seen in it.

Misc:
No abdominal lymphadenopathy noted. No mass, cyst or free fluid seen in peritoneal cavity.
There is thickening of the mesentery and omentum, and moderate ascites with septations and loculations. One large loculation seen in the lesser sac which is anteriorly compressing the stomach.

Impression
Mild Hepatomegaly.
There is thickening of the mesentery and omentum, and moderate ascites with septations and loculations. One large loculation seen in the lesser sac which is anteriorly compressing the stomach.
Rest of the scanned organs are unremarkable.

Figure 1: Ultrasonography Report

SHAIKH ZAYED HOSPITAL
 NATION - ONE LAB

12-Jun-2021 21:54
 Reference: Dr. Sheraz Saleem Sargodha
 Consultant: Dr. Sheraz Saleem Sargodha
 Patient Number: 7301-21-8039592
 Case Number: 7337-12-06

03028143981
 Registration Location: Sargodha-2: Near DHQ Hospital
 Note: Sample Brought to the Lab

Department of Molecular Virology Reporting Time: 14-Jun-2021 14

Mycobacterium Tuberculosis (MTB) DNA AND Rifampicin (RIF) Resistance Genes

Gene Expert MTB-RIF

Specimen	Ascitic Fluid
Result	MTB Not Detected

Comments: (Xpert MTB/RIF PCR kit. Detection limit 131 CFU/ml)

Please interpret in reference to clinical findings and therapeutic considerations.

Figure 2: Gene Expert MTB-RIF

03041440862
 05-Jul-2021 19:29
 Reference:

SHAIKH ZAYED HOSPITAL, LAHORE, PAKISTAN
 DEPARTMENT OF MICROBIOLOGY & VIROLOGY
 042-35865731
 Ext: 2247

Patient Name: Miss. Mahroor Nadeem
 Patient Type: Public
 Sample Received: 22/06/2021 11:44 AM
 MR #: 21007923
 Age / Gender: 15 Y O M G D / Female
 Referred By: PROF. KASHIF MALIK
 Location: [IPD] GASTRO-ENTEROLOGY WARD ROOM 10
 Lab Order #: 38MM1941367
 Sample #: 38MM1941367
 Contact #: 0304-1440862

Serology / Immunology

SPECIMEN	Specimen	Result	Cutoff Value	BY ICT
VIRAL SEROLOGY	Blood			
HBsAg		Negative		
			[WHO Recommendations] Test performed by EIA, CIA methodology with an overall sensitivity of 99%. The diagnostic value of the test is still screening only and false positive results are expected, which MUST be reconfirmed by a repeat sample. All positive results MUST be confirmed by PCR (NAT) methodology.	
HBcAb		Negative		
			[WHO Recommendations] Test performed by EIA, CIA methodology with an overall sensitivity of 98%. The diagnostic value of the test is still screening only and false positive results are expected, which MUST be reconfirmed by a repeat sample. All positive results MUST be confirmed by PCR (NAT) methodology.	
Anti HIV I & II		Negative		
			[WHO Recommendations] Test performed by EIA, CIA methodology with an overall sensitivity of 98%. The diagnostic value of the test is still screening only and false positive results are expected, which MUST be reconfirmed by a repeat sample. All positive results MUST be confirmed by PCR (NAT) methodology.	

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 MRS, PhD

DEMONSTRATOR/ MO
 MED. TECHNOLOGIST

Figure 3: Virology Report



Department of Pathology
Special Chemistry Report

10-JUL-2021 20:15:36

Page 1 of 1

Order No: 001SCH21198009
 Patient No: 001-80003663316
 Name: MAHNOOR NADEEM
 Sex: 15 Year(s)/Female
 Age: 92 0304 1440862

Ordered By :
 Referring Physician : Muhammad Khan Malik-Sar
 In-house Consultant :
 Report Destination : Cc 16, Satellite Town, Sargodha
 Requested : 09-JUL-2021 21:06:52
 Specimen Received : 10-JUL-2021 19:10:01
 Reported : 12-JUL-2021 16:13:40

Tumor Markers

SPECIMEN : SERUM
TEST(s)
 CA-125 (OM-MA)

RESULT(S)-UNITS
 159 U/mL

REFERENCE RANGE
 < 21

Saniya Hakim
 Sr. Medical Technologist

Electronically verified report, no signature(s) required.

Dr. Asif Loya
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 MBBS, DABP (AP, CP,
 Cytopathology)

Figure 4: CA-125 Levels

Patient Detail: **Amoor Nadeem . 15 (Y) / Female**
 Mobile: **03041440862**
 Registration Location: **Sargodha-1: STAT LAB Satellite Town (048-3252611)**

Registration Date: **05-Jul-2021 19:29**
 Reference: **Blue Card Out of station 20%**
 Consultant: **DR. TAYYAB HASNAJIN**

Patient Number: **7401-21-2012443259**
 Case Number: **7451-05-07**

CHUGHITAL LAB
 ONE NATION - ONE LAB

Department of Histopathology

Cytology: **C21-6344** Specimen: **Ascitic Fluid**

Gross: **Received 35.0ml dark yellow fluid with clot in syringe**
Two spins

BioChemistry :			Microscopic :		
Test	Value	Unit	Test	Value	Unit
LDH	2161	U/L	RBCs	17000	
Glucose	< 5.0	mg/dl	WBCs	3745	
Protein	3.9	G/dl	Neutrophils	83	
Albumin	1.2	G/dl	Lymphocytes	17	

Cytology Examination	Cytological examination of cytospin preparations show <u>degenerated cells</u> . Inflammatory cells comprising predominantly neutrophils are seen. <u>No atypical cells are noted.</u>
Z.N / Fluorescent Stain	No Acid Fast Bacilli seen in the smears examined.
Gram Stain	No micro-organisms seen.
Diagnosis	Ascitic Fluid: - Acute Inflammatory Yield

Dr. Azra Baahir
 MBBS, FCPS (Histopathology)
 Fellow Histopathologist
 07-July-2021

Dr. A.S.Chughital
 M.B.B.S., M.Phil, M.I.A.C, F.C.P.S, F.C.P.P,
 FRCPath Consultant Pathologist
 07-July-2021

Figure 5: Ascitic Fluid Analysis



Figure 6: Patient Undergoing Exp. Laprotomy

Approximately 4L of ascitic fluid was extracted along with the right salpingo-oophorectomy. The tumor was found to be with a fibroma component on pathological testing.

The post-operative phase went well, and the patient recovered quickly enough to be released from the hospital on the seventh post-operative day. Within a week following surgery, the pleural effusion was radiologically cleared.

Discussion

Joe Vincent Meigs and John W Cass published a series of seven instances of ovarian fibroma with ascites and hydrothorax in 1937. Rhodes and Terrell coined the name "Meigs syndrome" to describe the condition. Despite the fact that the link between benign ovarian tumors and pleural effusion had previously been documented, it was Meigs and Cass who reported the disappearance of ascites and pleural effusion after the tumor was removed. After many writers reported comparable instances, Meigs syndrome was recognized as a separate illness. In 1954, Meigs came up with a new definition for the condition.

For the diagnosis of Meigs syndrome, the following criteria must be met:

- a) presence of a benign ovarian tumor such as fibroma, thecoma, granulosa cell tumor, or Brenner tumor
 - b) ascites
 - c) pleural effusion
 - d) remission of ascites and pleural effusion when the tumor is removed
- After another author who reported a similar manifestation before Meigs, this condition is also referred to as Demons-Meigs syndrome [1-4].

Meigs' syndrome's pathogenesis is still unknown. However, ascites is a frequent symptom of ovarian tumors, and various causes have been proposed, including tumor torsion and obstruction of venous drainage. A hard, solid ovarian tumor irrigating the peritoneal surfaces, according to Meigs, may promote the generation of peritoneal fluid [5]. The direct pressure on nearby lymphatics or arteries, hormonal stimulation, or the release of mediators from the tumor, all of which contribute to increased capillary permeability, are some of the other processes suggested [6].

Pleural effusion has also been an unknown cause. Pleural effusion is believed to be caused by the flow of ascitic fluid into the pleural space through the diaphragm or diaphragmatic lymph veins, which are more frequent on the right side. The quantity of ascites has little bearing on the extent of the pleural effusion. The fast clearance of abdominal and pleural fluid following the excision of the pelvic tumor confirms the link between the tumor and ascites [7].

CA125 is expressed as a cell-surface membrane-bounded protein undergoing metaplastic differentiation into a Müllerian-type epithelium or as a soluble protein in body fluids [8]. The presence of CA125 in body fluids corresponds to specific physical situations. CA125, for example, is still the most widely researched biomarker for

the early diagnosis of ovarian cancer (OC), and it has shown useful in both detection and disease surveillance [9].

CA-125 may also be found in adult tissues, including the fallopian tube epithelium, endocervix, endometrium, and ovaries [10]. It's also present in the pleura, pericardium, and peritoneum's mesothelial cells. As a result, certain normal bodily tissues may generate a small amount of CA125 in the circulation or serum.

The association of Meigs' syndrome with increased blood CA125 levels is uncommon, with just 28 instances reported in the literature. The exact mechanism is unknown, although biological variables, mechanical irritation from a big tumor, or a rise in intraperitoneal pressure caused by a high amount of ascites may all play a role.

Massive abdominal ascites, pleural effusion, and pelvic mass are all associated with a high serum CA125 level, indicating malignancy. However, the current case report highlights the significance of obtaining histological confirmation of Meigs' syndrome via proper surgery since a tiny proportion of patients, particularly young women, will have a benign etiology despite an increased blood CA125 level.

Acknowledgement

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