

An Adolescent Female With Bulging Abdomen

James D. Collins, MD

Keywords: radiology ■ abdomen

J Natl Med Assoc. 2010;102:353-355

Author Affiliations: University of California at Los Angeles, Department of Radiological Sciences, Los Angeles, California.

Correspondence: James D. Collins, MD, University of California at Los Angeles, Department of Radiological Sciences, 10833 Le Conte Ave, BL-428 CHS/UCLA mail code 172115, Los Angeles, CA 90095 (jamesc@mednet.ucla.edu).

CLINICAL HISTORY

The patient is a 12-year-old Mexican female 3 years postoperative ovarian tumor resection with 1 month of radiation therapy in Mexico. Diagnosis of ovarian tumor was made when she presented with abdominal pain and weight loss. She did well after therapy until 6 months prior to admission, when she developed crampy lower-abdominal pain and epigastric fullness after meals. She had experienced bouts of hematuria and dysuria, and was absent of secondary sex characteristics. She lost 6.8 kg 1 month prior to admission, when she developed nausea and vomiting following intake of solid foods and began taking only liquids.

PHYSICAL EXAMINATION

On admission the following were revealed: blood pressure, right arm, 110/74 mm Hg; pulse, 78; temperature 98.6°F; and labored respiration rate of 22 beats per minute. She had shifting dullness, “fluid thrill” or “fluid wave,” and tenderness over the left abdomen consistent with ascites. In addition, she had percussion dullness at both lung bases and labored breathing.

LABORATORY RESULTS

Hemoglobin was 12, hematocrit, 31, with normal differential. Urinalysis was pending.

RADIOGRAPHIC FINDINGS

Posterior-anterior chest radiograph (Figure 1) displayed the forward-rotated round shoulders, drooping left as compared to the right; anterior-rotated heads of the clavicles low over the posterior fifth intercostal spaces reflecting the forward shift of the cervicothoracic spine; asymmetric elevated dome of the shift of the diaphragm, right greater than left; obscured cardiophrenic

sulci; sharp angulated costophrenic sulci reflecting bilateral pleural effusions, right greater than left, and metal clips over the lower abdomen.¹

The lateral chest radiograph (Figure 2) cross-referenced the posterior-anterior chest radiograph to display the increased anterior-posterior diameter of the abdomen; forward shift of the cervicothoracic spine (round shoulders); anterior and posterior shallow sulci reflecting bilateral pleural effusions; sutures over the anterior abdominal wall, and narrow subcutaneous tissues.

An intravenous pyelogram (IVP) was obtained to evaluate the kidneys. The anterior scout radiograph of the abdomen (Figure 3) displayed the lateral displacement of the descending colon, suggesting a possible retroperitoneal mass accentuating feces within the proximal transverse colon. A 30-minute postcontrast injection radiograph (Figure 4) displayed contrast within the left kidney, not within the right kidney. Contrast in the left kidney displayed the lateral displaced on-end renal pelvis, lateral-rotated major calyces and mild dilatation of the renal papillae, the on-end lateral displaced ureter crossing the inferior pole of that kidney, and psoas major muscle into the bladder.

A delayed 1-hour anterior-posterior abdominal radiograph (not demonstrated) displayed residual contrast within the lateral displaced left kidney but not in the right kidney.

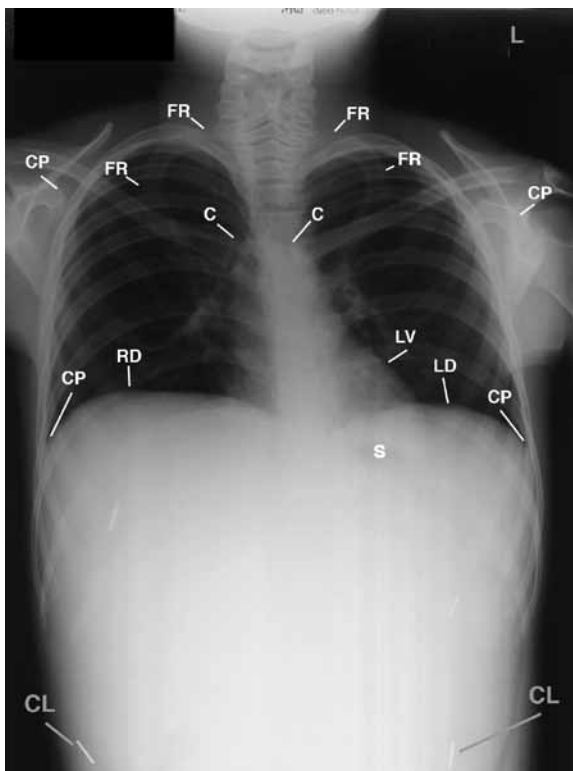
IMPRESSION

- (1) large retroperitoneal abdominal mass, as above.
- (2) nonfunctioning right kidney secondary to the invasion of the renal vasculature or long-term obstruction of the ureter with destruction of the renal parenchyma on the right side;
- (3) bilateral large pleural effusions, right greater than left;
- (4) bilateral atelectatic changes secondary to the pleural effusions and ascites; and
- (5) asymmetric round shoulders as above.

SPECIAL PROCEDURE

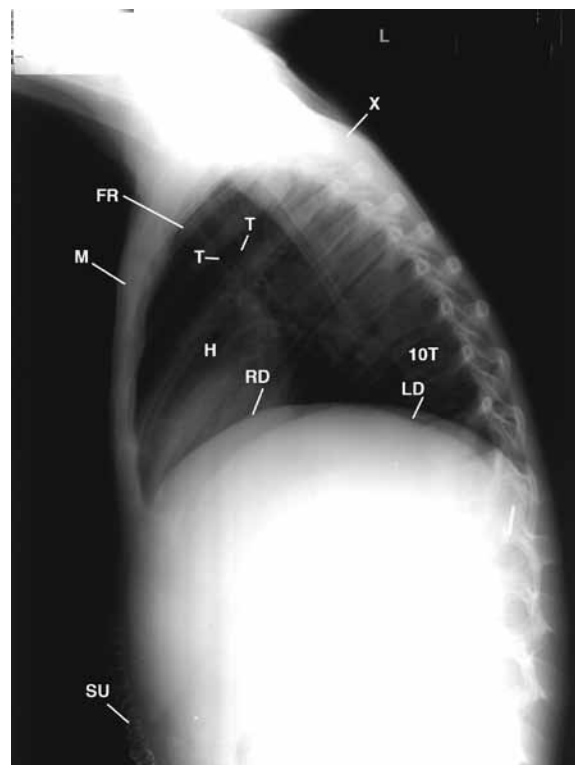
A thoracentesis under fluoroscopic control was requested: 20-30 cc of serous fluid was removed and sent to the pathology for cytology and cultures.

Figure 1. Posterior-anterior chest radiograph displaying the forward-rotated round shoulders, left drooping as compared to right; anterior-rotated heads of the clavicles (C) low over the fifth posterior intercostal spaces (not labeled), and the hazy, obscured cardiophrenic sulci (not labeled), asymmetric elevated apparent domes of the diaphragm accentuating sharp costophrenic sulci (CP) reflecting bilateral pleural effusions.



Abbreviations: CL, clips; CP, coracoid process; FR, first rib; LV, left ventricle; LD, left hemidiaphragm; RD, right hemidiaphragm; S, stomach.

Figure 2. Lateral radiograph that cross-references the posterior-anterior chest radiograph to display the increased anterior posterior girth of the abdomen; anterior and posterior shallow sulci (not labeled) reflecting bilateral pleural effusions and the hazy abdomen of ascites; forward shift of the cervicothoracic spine (round shoulders), and wire sutures (SU) over the anterior abdominal wall.



Abbreviations: FR, first rib; H, heart; L, left; LD, left hemidiaphragm; M, manubrium; RD, right hemidiaphragm; T, trachea; X, round shoulders; 10T, 10th thoracic vertebra.

DIAGNOSIS

Cytology confirmed metastatic dysgerminoma.

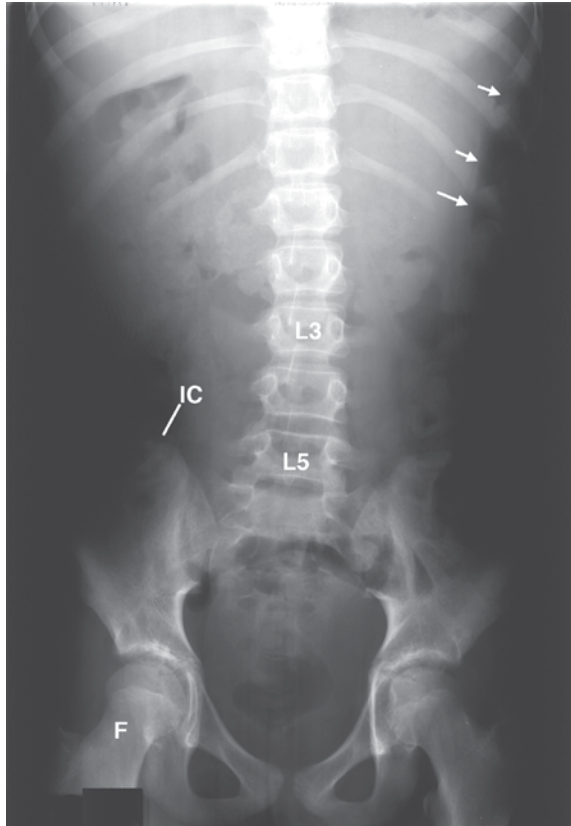
DISCUSSION

Dysgerminoma is the female counterpart of seminoma. The most common route of spread is by way of retroperitoneal, mediastinal, and supraclavicular fossa lymphatic drainage. The tumor occurs most frequently during the reproductive ages, not only primary within the ovaries but as a primary foci in the mediastinum.² The recommended therapy years ago favored tumor resection and offered few choices. If the tumor was less than 10 cm and showed no capsular invasion and if the patient desired to maintain the reproductive function, a simple oophorectomy without postoperative radiation may have been performed. In all other cases of the disease confined to the pelvis and abdomen, a total abdominal hysterectomy and bilateral salping-oophorectomy (TAH-BSO) fol-

lowed by 2500-3000 rads to the entire abdomen with appropriate blocks were administered.³ Multimodal therapy in the last 15 years has offered an alternative and a different outlook and therefore a choice of therapy. Multimodal treatment generally consisted of surgery and radiotherapy for dysgerminoma with the addition of chemotherapy for the nondysgerminoma. Survival depended on the stage and histological appearances of the tumor. Interinstitutional and international cooperation improved the survival and lowered the morbidity of treatment. Dysgerminoma of the ovary, as compared to other malignant germ cell tumors, have a high sensitivity to radiotherapy. Dysgerminoma of the ovary are also similar to testicular seminomas in that they are very sensitive to chemotherapy.²

Patients in whom the disease is at advanced stages have a poor prognosis, as suggested in our patient, irrespective of histological features.^{3,4} The choice of therapy is based on risk-benefit evaluations of the roles of surgery,

Figure 3. Scout anterior-posterior radiograph of the abdomen intravenous pyelogram that displays lateral displacement of descending colon (3 small arrows), suggesting a possible mass accentuating feces within the right transverse colon.



Abbreviations: F, femur; IC, iliac crest; L3, third lumbar vertebrae; L5, fifth lumbar vertebrae.

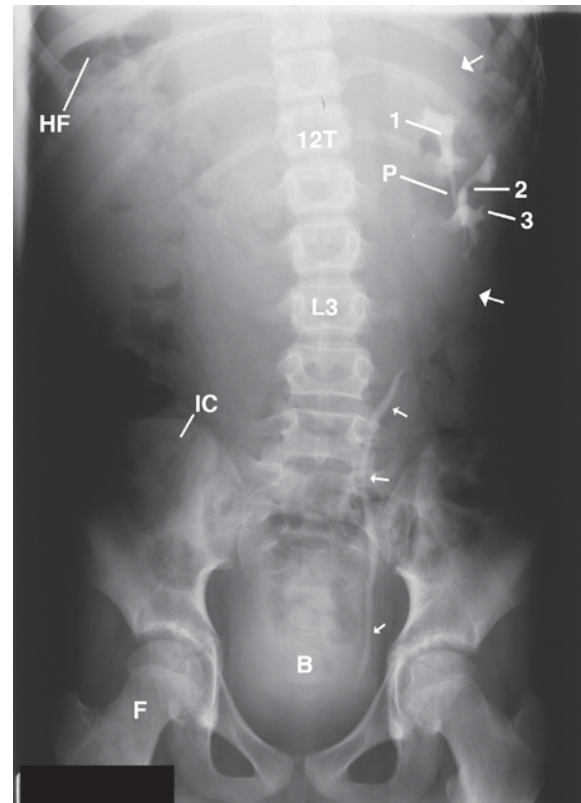
irradiation, and chemotherapy, since all 3 modalities have their associated morbidities.^{5,6} In our patient, the initial presenting complaints and treatment were not clear. Weight loss, bilateral pleural effusion, ascites, and positive cytology clouded her projected survival.

Although the parents were made aware of our findings, she was lost to follow-up after discharge to her treating physician.

Take-Home Message

The clinical history is key to understanding the clinical problems patients present post-surgical resections. The simple request of posterior and lateral chest x-rays of a patient with suspected pleural effusions might lead to obtaining a specimen for a conclusive diagnosis.¹ A lateral decubitus chest radiograph may have helped to confirm the suspected pleural fluid. The history of hematuria and dysuria pointed to the need to evaluate the genitourinary system on an IVP. Certainly ultrasound and computerized procedures would have offered additional diagnos-

Figure 4. Thirty-minute post-contrast injection radiograph displaying the lateral displacement of the left kidney (2 large arrows). Contrast is displayed in the on-end lateral displaced renal pelvis (P) with mild dilatation of the renal papillae (3), lateral rotated major (1) and minor (2) calyces (1), lateral displaced ureter (3 small arrows) crossing the inferior pole of the left kidney, and the psoas major muscle (not labeled) into the hazy contrast marginating the bladder (B).



Abbreviations: F, femur; HF, hepatic flexure; IC, iliac crest; L3, third lumbar vertebra; 12T, 12th thoracic vertebra.

tic information. However, the chest radiographs suggested pleura effusions that warranted a simple inexpensive thoracentesis of the thorax to make the diagnosis.

REFERENCES

1. Collins JD, Burwell D, Furmanski S, Lorber P, Steckel RJ. Minimal detectable pleural effusions. A roentgen pathology model. *Radiology*. 1972;105(1):51-53.
2. Brown K, Collins JD, Batra P, Steckel RJ, Kagan AR. Mediastinal germ cell tumor in a young woman. *Med Pediatr Oncol*. 1989;17(2):164-167.
3. Moss W. *Therapeutic Radiology*, 2nd ed. 1965. 378-379.
4. Friedman M, Browed S, Nissenbaum MM. Germ cell tumors of the ovary. A clinical study of 15 cases. *S Afr Med J*. 1984;65(15):604-606.
5. Steckel RJ, Collins JD, Snow HD, Lagasse L, Barenfus L, Patin T. Successful Radiation Protection of the Normal Kidney by Selective Arterial Infusions. *Cancer*. 1974;34:1046-1058.
6. Evans AE, D'Angio GJ, Synder H. Selecting initial therapy for pediatric genitourinary cancers. *Cancer*. 1987;60(3 suppl):480-489. ■