

## Eponyms in radiologic signs

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## Learning objectives

1. To recognize the most frequent and important radiologic signs that are eponyms.
2. To acquire some historical knowledge about the names behind the eponyms and their contribution to medicine in general and radiology in particular.

## Background

- An eponym is an historic person or legend, whether real or fictional, after which a thing, a place or a new discovery is named or to whom the condition resembles.
- They are used to concisely communicate a complex abnormality
- But the use of eponyms may fail to convey the meaning or cause miscommunication between the radiologist and the clinician. [1]
- Regardless of these limitations, eponyms are still widespread in medicine, and radiology in particular and some of the signs in radiology are only recognized by their eponym name.
- Therefore, a familiarity with these terms is important both for the radiologist and the referring clinician.
  
- In this educational exhibit, the authors discuss several of radiologic signs' eponyms, including relevant imaging features, as well as a brief biography of the eponyms' namesakes.
- These signs have been mostly described in conventional radiology. In this review we will elaborate on their CT correlates as well.
- Three areas of radiology will be covered: **Gastrointestinal**, **Thorax** and **Musculoskeletal**.

## Findings and procedure details

### GASTROINTESTINAL

#### 1- HAMPTON LINE (Fig. 1 on page 12)

- It is a thin straight line, seen in profile, across the neck of a gastric ulcer, on barium studies.
- It represents a thin rim of edematous undermined gastric mucosa.

- It reflects the more resistant mucosa overhanging the more rapidly destroyed submucosa.
- It indicates the **benign nature of the gastric ulcer**. [2]

### Aubrey Otis Hampton

- Aubrey Otis Hampton (1900-1955) was an American radiologist, described by many as one of the most intuitive radiologists in the country.
- He worked at Massachusetts General Hospital from 1926 to 1942.
- During World War II he served as chief of radiology at Walter Reed Army Hospital in Washington, DC. He helped create a Fellowship for Radiological Pathology at the Armed Forces Institute of Pathology
- His principal area of expertise was chest radiology.
- He was the man who first described the Hampton line, Hampton hump and Hampton maneuver (rolling a supine patient to both sides to obtain an air contrast x-ray in gastrointestinal fluoroscopy). [1]

### **2- CARMAN MENISCUS SIGN** (Fig. 2 on page 13 & Fig. 3 on page 14)

- It refers to a large flat-based ulcer with heaped-up edges that fold inward upon themselves during compression, trapping a lenticular barium collection that is convex relative to the lumen.
- It indicates the **malignant nature of the ulcer**.

### Russel Daniel Carman

- Russell Daniel Carman (1875-1926) was a Canadian-born doctor who first worked as a general practitioner in the USA.
- Having acquired an x-ray machine early in his career, he went on to become Professor of Roentgenology at the medical schools of St Louis University and Washington University.
- As he thought employment of x-ray demanded an intimate knowledge of things, he pushed for Roentgenology to become a separate medical specialty.
- Carman was among the 30 founder members of the Radiological Society of North America, serving as president in 1923. He was also elected President of the American Roentgen Ray Society in 1924.
- He advocated the confirmation of radiologic findings with the surgical and pathologic results.
- Carman's main field of expertise was gastrointestinal radiology, resulting in the publication of *The Roentgen Diagnosis of Diseases of the Alimentary Canal* in 1917.
- In an irony of fate, Carman became ill in 1925 and his colleagues performed a fluoroscopic examination of him. When he saw the films he stated: "cancer

of the stomach, inoperable"... minutes later he was giving a lecture to more than 2600 physicians... [3]

### 3- RIGLER SIGN (Fig. 4 on page 16, Fig. 5 on page 16 & Fig. 6 on page 17)

- It is also known as the double wall sign.
- It represents air on both sides of the intestine (luminal side and peritoneal side).
- Gas is normally found only on the luminal surface of the bowel wall and not the serosal surface. When a moderate amount of free intraperitoneal air exists, however, the free air is more likely to accumulate between bowel loops, thus permitting visualization of the outer walls of the bowel.
- It indicates **pneumoperitoneum**, which is pathologic unless the patient underwent a recent abdominal surgery.
- The Rigler sign is the second most common sign of pneumoperitoneum on supine radiographs (32%), right after the right upper quadrant subdiaphragmatic free air.
- A false double wall sign can result from two loops of bowel being in close proximity with one another. [4]

### 4- RIGLER'S TRIAD (Fig. 7 on page 18, Fig. 8 on page 19 & Fig. 9 on page 20)

- It encompasses pneumobilia, small bowel obstruction and a gallstone in the bowel - typical findings of **gallstone ileus**.
- The hypothesis is that patients have subacute or chronic cholecystitis that leads to gallstone erosion into the bowel (most often through a cholecystoduodenal fistulae).
- The site of obstruction is usually the terminal ileum because it is the narrowest portion of the small bowel.
- As only a minority of gallstones are radio-opaque, not all the elements of the triad are present and recognizable on conventional radiographs. CT allows a correct diagnosis of gallstone ileus with higher accuracy and detects the exact locations of the ectopic stone and of the biliary-enteric fistula. [5]

### Leo George Rigler

- Leo George Rigler (1896 - 1979) was an American radiologist who started as a general practitioner in St. Louis.
- Having expressed great interest in the new area of x-ray diagnosis, Rigler was given the responsibility for the field of Roentgenology and he went on to

become full time chairman of Radiology at the University of Minnesota from 1933 to 1957.

- He then became professor of Radiology at the University of California, where he was responsible for the postgraduate radiology training until his death in 1979.
- After World War II, he worked with the World Health Organization helping to establish clinical radiology teaching programs in India, Iran and Israel.
- He served as president of the Radiological Society of North America, chancellor of the American College of Radiology and president of the Fleischner Society.
- Rigler was the first speaker of the annual Ross Golden lecture.
- He published over 250 articles and edited six books, but he is mostly remembered for describing Rigler's sign and Rigler's triad. [6]

## 5- CHILAITITI SIGN (Fig. 10 on page 21 & Fig. 11 on page 22)

- It is also called hepatodiaphragmatic interposition of the intestine.
- It stands for the temporary or permanent presence of colon or small intestine in the hepatodiaphragmatic space, seen in chest radiographs.
- It is usually an **anatomical variant** and fortuitous finding, in 0,1-1% of all chest radiographs.
- When there are associated symptoms, mostly related to the digestive system, such as dyspepsia, constipation, abdominal pain or transverse colon volvulus it is called Chilaiditi syndrome.
- Chilaiditi sign does not require treatment in the absence of symptoms. The clinical relevance of Chilaiditi sign lies in the differential diagnosis of pneumoperitoneum (rugal folds within the gas suggest that it is within bowel and not free), which requires immediate surgical treatment. [7]

### Demetrius Chilaiditi

- Demetrius Chilaiditi (1883 - ?) was an Ottoman-Greek radiologist, born in Vienna, where he received his doctorate in 1908.
- He worked as a radiologist in Constantinople, and was consulting radiologist at French, Greek and Italian Hospitals.
- He was founder member of the Turkish Radiological Society.
- Chilaiditi published papers on the therapy of malignant tumors, a special procedure for the treatment of hypertrichosis, gynecological radiotherapy, diseases of the liver and duodenal stenosis. [8]
- He is mostly remembered, however, for his article from 1910, where he reported 3 patients with the incidental radiologic finding of colonic interposition between the liver and diaphragm, thereafter called the Chilaiditi sign. [9]

## THORAX

### 6- HAMPTON HUMP (Fig. 12 on page 23 & Fig. 13 on page 24)

- It is a circumscribed juxtapleural pulmonary opacity, in the form of a wedge, with a rounded or truncated convex medial border pointing towards the hilum and the base against a pleural surface, seen on a chest x-ray.
- It represents hemorrhage and necrotic lung tissue (**pulmonary infarction**) **caused by acute pulmonary embolism** (PE).
- It is, nevertheless, a rare finding and it has a low specificity for PE. [10]
  
- See biography of **Aubrey Otis Hampton** in the Gastrointestinal section above.

### 7- FLEISCHNER SIGN (Fig. 14 on page 25, Fig. 15 on page 27 & Fig. 16 on page 29)

- It represents the **enlargement of a central pulmonary artery**, resulting either from a subacute/chronic rise in pulmonary arterial pressure secondary to peripheral emboli or from the acute distension of a central pulmonary artery by a large clot in the setting of **pulmonary thromboembolism**.
- Enlargement of a pulmonary artery results in increased hilar size and density, but the hilum retains its normal "vascular" appearance (differentiating it from other causes of hilar enlargement like lymphoma and sarcoidosis).
- This sign has a relatively high specificity but very low sensitivity for PE. It is a helpful sign particularly when serial radiographs reveal progressive increase in size of the affected vessel. [11]

### **Felix Fleischner**

- Felix Fleischner (1893-1969) was an Austrian-born radiologist who was chief of the roentgen department at Vienna Children's Hospital until 1938, the year Hitler invaded Austria and Fleischner immigrated to the United States.
- In 1942, he became the first full-time radiologist at Boston's Beth Israel Hospital.
- He became Professor of Radiology at Harvard Medical School in 1952.
- He was a renowned lecturer and a scholar, having published 251 scientific articles on various topics.

- In 1969, only three months after his death, the newly formed multidisciplinary international society of leading experts in chest disease - Fleischner Society - was named after him. [1]

## 8- WESTERMARK SIGN (Fig. 17 on page 29)

- It refers to an area of pulmonary radiolucency (representing **oligemia**), distal to a large central pulmonary artery with an abrupt truncation (representing an occlusive embolus).
- This regional oligemia is explained either by an abrupt cutoff of pulmonary vascularity distal to the embolus or by reflex vasoconstriction.
- The reduction in blood volume combined with relative preservation of the lung volume results in an increased radiographic transparency.
- The Westermark sign is relatively uncommon but has high specificity in the diagnosis of **pulmonary embolism**. [11]

## Nils Johan Hugo Westermark

- Nils Johan Hugo Westermark (1892-1980) was a Swedish radiologist.
- He worked at Karolinska Radium Hospital and St. Göran Hospital, both in Stockholm.
- He lived in Djurgården, Stockholm, and for many years was chairman of the Djurgården historical society where he did extensive research on the city's history.
- He was part of the board of the Swedish Society of Medical Radiology.
- Westermark mainly wrote and lectured about fluoroscopy ("roentgen cinematography") for the study of the respiratory movements and circulation, the early diagnosis of bronchogenic carcinoma, the identification of emphysema, pulmonary embolism and infarction.
- Although he was an internationally renowned radiologist, he is mostly remembered in his native country for being a crew member of the team that won the silver medal in sailing at the 1912 Stockholm Olympic Games. [1]

## 9- KERLEY B LINES (Fig. 18 on page 30 & Fig. 19 on page 31)

- Kerley lines are thin (0,5 - 1mm) linear pulmonary opacities caused by fluid or cellular infiltration into the interstitium of the lungs seen on chest radiographs.
- *A* lines are oblique in orientation, ragged and radiating from the hilum.
- *B* lines are short and sharp lines, in contact with the pleural margins and best seen laterally at the costophrenic angles.

- C lines are fine and interlacing lines at the lung bases resulting in a nonspecific reticular pattern.
- A and C lines are less commonly seen.
- Although unspecific, they frequently imply **thickening of interlobular septa in a patient with interstitial edema**, most likely secondary to left ventricular failure. [1]

### Peter James Kerley

- Peter James Kerley (1900-1978) was an Irish neurologist and one of the world's leading cardio-thoracic radiologist.
- Following graduation from University College, Dublin, in 1923, he was supposed to spend a year studying Otorhinolaryngology in Vienna but ended up converting to Radiology.
- In the 1940s, he worked with the British Ministry of Health in the screening of the population for tuberculosis.
- He was a founding member of the Faculty of Radiologists, currently known as the Royal College of Radiologists.
- He was editor of the six-volume "*Textbook of x-ray diagnosis*", which had a profound impact on Radiology and included the description of the A, B and C lines (of Kerley).
- Sir Kerley was knighted by Queen Elizabeth II, in 1972, in recognition of his services to Radiology and as radiologist to the Royal Family and Winston Churchill. [12]

### **10- GOLDEN S SIGN** (Fig. 20 on page 32 & Fig. 21 on page 33)

- It is seen on a PA chest radiograph as a collapsed right upper lobe, associated with a distorted minor fissure, whose lateral aspect is concave inferiorly and whose medial aspect is convex inferiorly, producing a "reverse S" appearance (sometimes it is called the reverse S sign of Golden).
- The Golden S sign can be seen both on PA chest radiographs and on CT scans. The analogous appearance at CT is a convex bulge along the fissural margin of the collapsed lobe, to produce an S shape.
- It is typically seen with **right upper lobe collapse, caused by a central obstructive mass**.
- Although bronchogenic carcinoma cannot be diagnosed definitively on the basis of this radiographic sign, the Golden S sign should be recognized and may provide an early radiologic clue to this diagnosis (or other central masses like metastasis, primary mediastinal tumor or enlarged lymph nodes). [13]

### Ross Golden

- Ross Golden (1889-1975) was an American radiologist who graduated from Harvard and then went to battle in France during World War I.
- In 1927, Golden attended classes from distinguished radiologists in Vienna (alongside Leo Rigler).
- He did his residency in Massachusetts and then worked in New York, where he published the work that made him famous - two cases of tumors obstructing the right upper lobe. However, he never mentioned the resemblance to an S (or reverse S) of the minor fissure.
- He also wrote about the roentgen diagnosis of diseases of the small intestine.
- An annual lectureship of the New York Roentgen Society was given his name. [12]

#### 11- GARLAND TRIAD (Fig. 22 on page 34 & Fig. 23 on page 35)

- It is also known as the 1-2-3 sign, and refers to a triad of almost symmetrical bilateral hilar adenopathy and right paratracheal adenopathy, on a chest radiograph.
- These features are suggestive of **thoracic sarcoidosis**, and are not typical of lung cancer or lymphoma, which are other common causes of lymphadenopathy on chest radiographs.
- Broncho-pulmonary nodes are more peripherally placed in the thorax than the nodes which enlarge in lymphoma which are true hilar nodes; therefore, usually there is preservation of the mediastinal-hilar clear space in sarcoidosis.
- Left paratracheal and aorto-pulmonary nodes are also frequently enlarged, but are harder to identify on chest radiographs. [10]

#### L. Henry Garland

- L. Henry Garland (1903-1966) was an Irish-born radiologist who practised most of his life in California.
- He visited the US in 1926, where he became a Radiology resident at Stanford University Hospital.
- His career was interrupted during World War II, where he served in different Naval Hospitals and at the front in the Pacific. [14]
- In 1947, Garland first described the "sarcoid type" adenopathy that now bears his name. [15]
- Garland was highly regarded as one of the best in the radiologic diagnosis and treatment of cancer and was, both as consultant and as a teacher, one of the brightest figures of his generation.
- As a recognition of his ability, he was chosen to give the Carman Lecture (of the Radiologic Society of North America) in 1957 and the Ross Golden Lecture (of the New York Roentgen Society) in 1959.

- Garland served briefly as president of the Radiologic Society of North America and was awarded its Gold Medal in 1961. [14]

## **12- NACLERIO'S V SIGN** (Fig. 24 on page 36 & Fig. 25 on page 37)

- It is seen on frontal chest radiographs as a V-shaped air lucency in the left lower mediastinal area.
- It occurs in the setting of **pneumomediastinum**, in which subpleural air tracks along the left inferolateral mediastinum (one limb of the V) and medial left hemidiaphragm (other limb of the V).
- Although Naclerio's V sign was originally described in patients with spontaneous esophageal rupture, it is not specific to that condition (e.g. pneumomediastinum from iatrogenic esophageal rupture or pneumomediastinum secondary to alveolar rupture).
- Nevertheless, in an appropriate clinical scenario, the presence of the Naclerio's V sign should alert the radiologist to the hypothesis of an esophageal rupture. [16]

### **Emil A. Naclerio**

- Emil A. Naclerio (1915-1985) was a thoracic surgeon who practiced in New York.
- He first described the V sign as a sign of pneumomediastinum, secondary to spontaneous rupture of the esophagus in 1957.
- Although he excelled in thoracic trauma and pacemakers, the world may remember him most from being part of the surgical team that saved the life of Martin Luther King, in 1958, when he was attacked by a mentally ill woman with a steel letter opener whose tip rested on the famed civil rights leader's aorta. [17]

## **MUSCULOSKELETAL**

### **13- CODMAN SIGN** (Fig. 26 on page 38)

- It refers to a distinctive triangular-shaped periosteal elevation away from the cortex, seen at radiography.
- It is caused by an aggressive bone lesion that grows faster than new periosteum can be ossified. Only the edge of the periosteum at the very margin of the lesion has time to ossify, creating a triangular lip of new bone.

- It is known to occur **in any aggressive process** that can lift the periosteum (including **benign lesions**, such as osteomyelitis).

### Ernest Amory Codman

- Ernest Amory Codman (1869-1940) was an American doctor.
- He graduated from Harvard Medical School in 1895, then became Assistant in Anatomy at Massachusetts General Hospital and Chief of the Surgical Services (general surgeon).
- One of his earliest interests was the newly discovered x-rays, having been appointed as the first "skiagrapher" (radiologist) at Boston Children's Hospital in 1899. He continued practicing general surgery nonetheless.
- In addition to his works on tumors, his best known contributions are to the shoulder pathology. He was responsible for several medical eponyms: Codman's tumor, Codman's triangle, Codman's exercises, Codman's sign, Codman's paradox and Codman's bursa.
- Codman was far ahead of his time. His concept of the *End Result*, a system in which "every hospital should follow every patient it treats, long enough to determine whether or not the treatment has been successful, with a view to preventing similar failures in the future" was sort of a forerunner of today's "evidence-based medicine." [18]

### 14- TERRY THOMAS / DAVID LETTERMAN SIGN (Fig. 27 on page 40 & Fig. 28 on page 40)

- It's a finding on a plain film of the wrist (or coronal CT) characterized by a widening (3-4 mm or more) of the joint space between the scaphoid and lunate.
- It is seen in patients with rotatory subluxation of the scaphoid (**scapholunate dissociation**) due to ligamentous injury. [19]

### Terry Thomas / David Letterman

- Terry Thomas was born Thomas Terry Hoar Stevens (1911-1990), and was one of Britain's most beloved eccentric comedians. He often reprised the role of an ignorant and snobbish Londoner.
- David Michael Letterman (1947 - ) is an American comedian and The Late Night show presenter. He has been on prime-time continuously since 1982, the longest career in talk show history.
- There's no record of any of these two comedians having contributed to medicine in any form, other than by making many of us laugh.
- They both are/were gap-toothed (frontal dental diastema), hence the eponym for scapholunate dissociation.

## **15- BAASTRUP SIGN** (Fig. 29 on page 41)

- Also known as Baastrup's syndrome or as Baastrup's disease (misnomer).
- It stands for the bony proliferation between the spinous processes of closely approximated adjacent vertebrae - "kissing spine" -, with resultant enlargement, flattening and reactive sclerosis of the interspinous surfaces (with normal intervertebral disc height and neuroforamina).
- It is most commonly seen in the lumbar spine.
- It develops with increasing age and **might be** a part of the expected **degenerative** changes in the aging spine. These patients may experiment back pain when standing erect which is relieved by bending forward; the **clinical significance**, however, is **unknown**. [20]

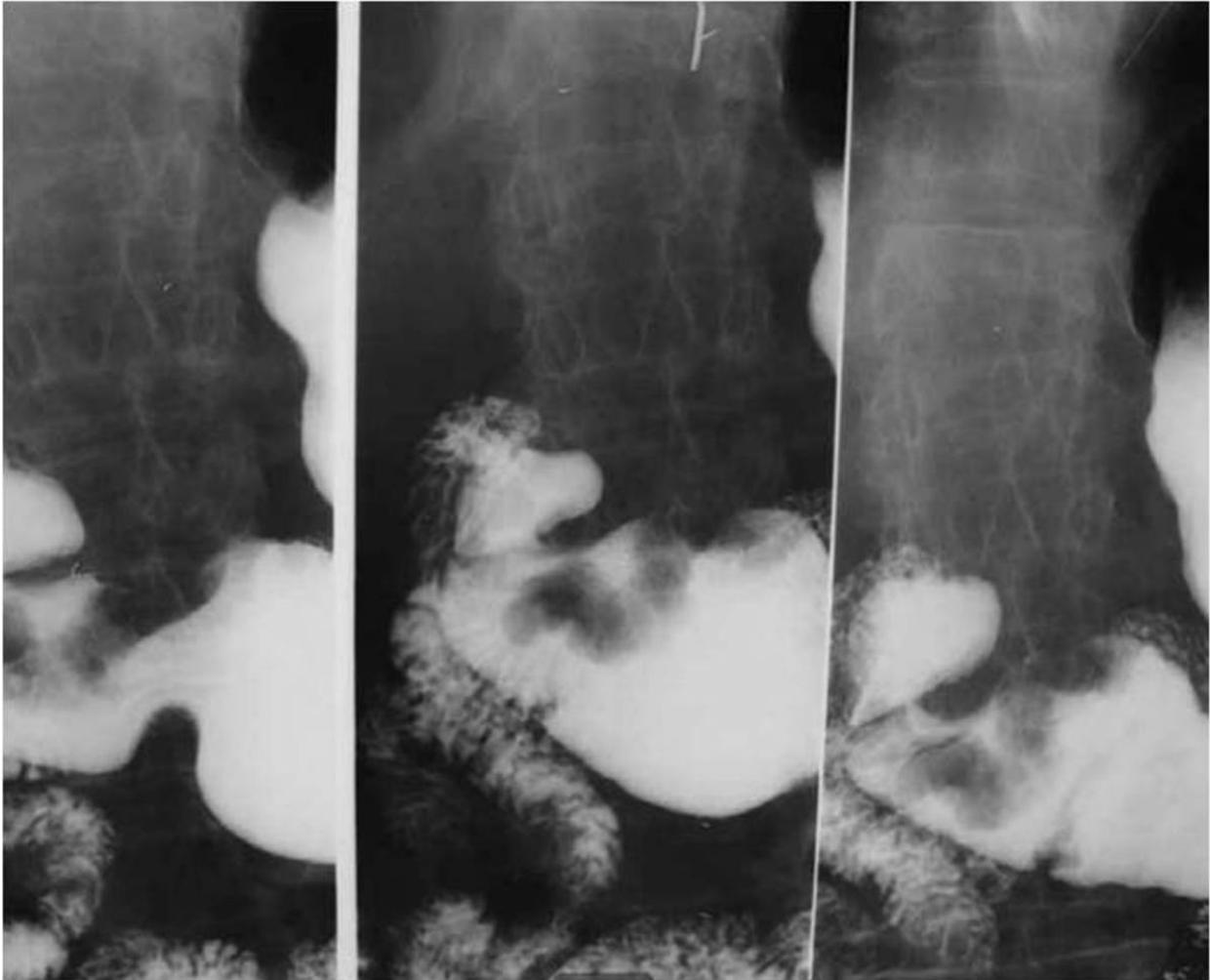
### **Christian Ingerslev Baastrup**

- Christian Ingerslev Baastrup (1855-1950) was a Danish radiologist, who graduated in medicine from the University of Copenhagen in 1909.
- After serving his internship in various hospitals, and working as assistant physician in departments of Otolaryngology and Ophthalmology, he reluctantly accepted the role as an assistant in the Roentgen department at Rigshospitalet (because Radiology did not enjoy a high esteem from the medical circles at that time). From then on he worked in several Danish roentgenological clinics.
- Baastrup participated in a great number of international radiological meetings and was a collaborator in the journal *Acta Radiologica*.
- He participated in the establishment of a museum of medical history, for which he donated one of the world's largest collections of x-ray machines.
- In 1933, Baastrup described in detail the clinical and radiological features of the sign that now bears his name. [12]

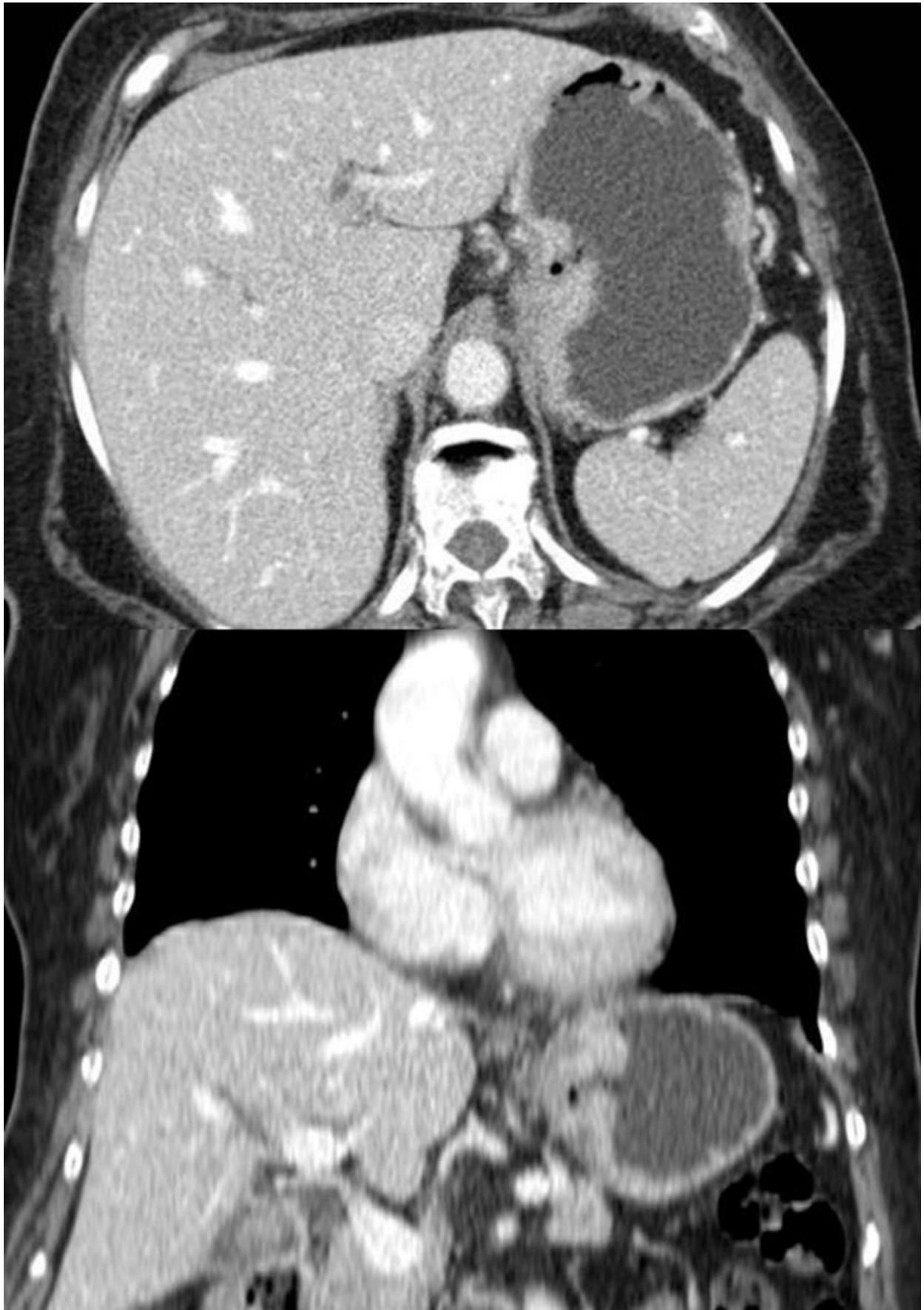
**Images for this section:**



**Fig. 1:** HAMPTON LINE - Upper Gastrointestinal Series: There is a collection of barium on the lesser curvature of the stomach which projects beyond the anticipated wall of the stomach, in profile, with a millimetric radiolucent line at its neck - the Hampton line



**Fig. 2:** CARMAN MENISCUS SIGN - Upper Gastrointestinal Series: In the lesser curvature of the stomach, there is a large filling defect with a central lenticular barium collection that is convex relative to the lumen and does not project beyond the gastric wall - Carman meniscus sign



**Fig. 3: CARMAN MENISCUS SIGN** - Contrast-enhanced abdominal CT of a different patient, axial and coronal reformation: The CT equivalent of a Carman meniscus sign is shown: there is a flattened polypoid mass that is convex relative to the lumen and has a central ulceration (with air trapped inside), in the lesser curvature of the stomach.



**Fig. 4: RIGLER SIGN** - Abdominal radiograph, supine: right upper quadrant subdiaphragmatic free air outlining the hepatic flexure of the colon - Rigler sign - indicating pneumoperitoneum.



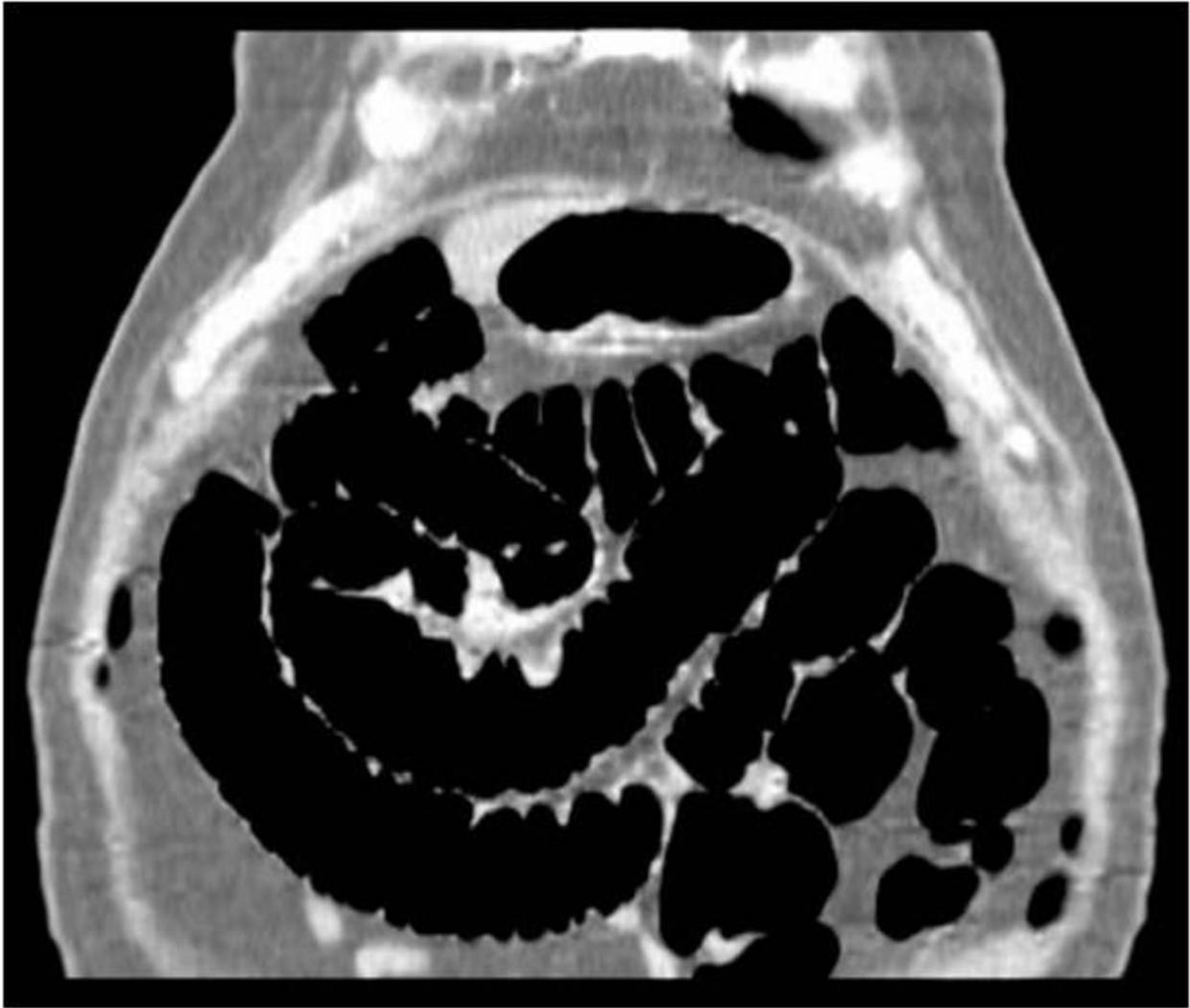
**Fig. 5:** RIGLER SIGN - Abdominal radiograph, horizontal ray, left lateral decubitus: Free air outlining the small bowel wall - Rigler sign - indicating pneumoperitoneum.



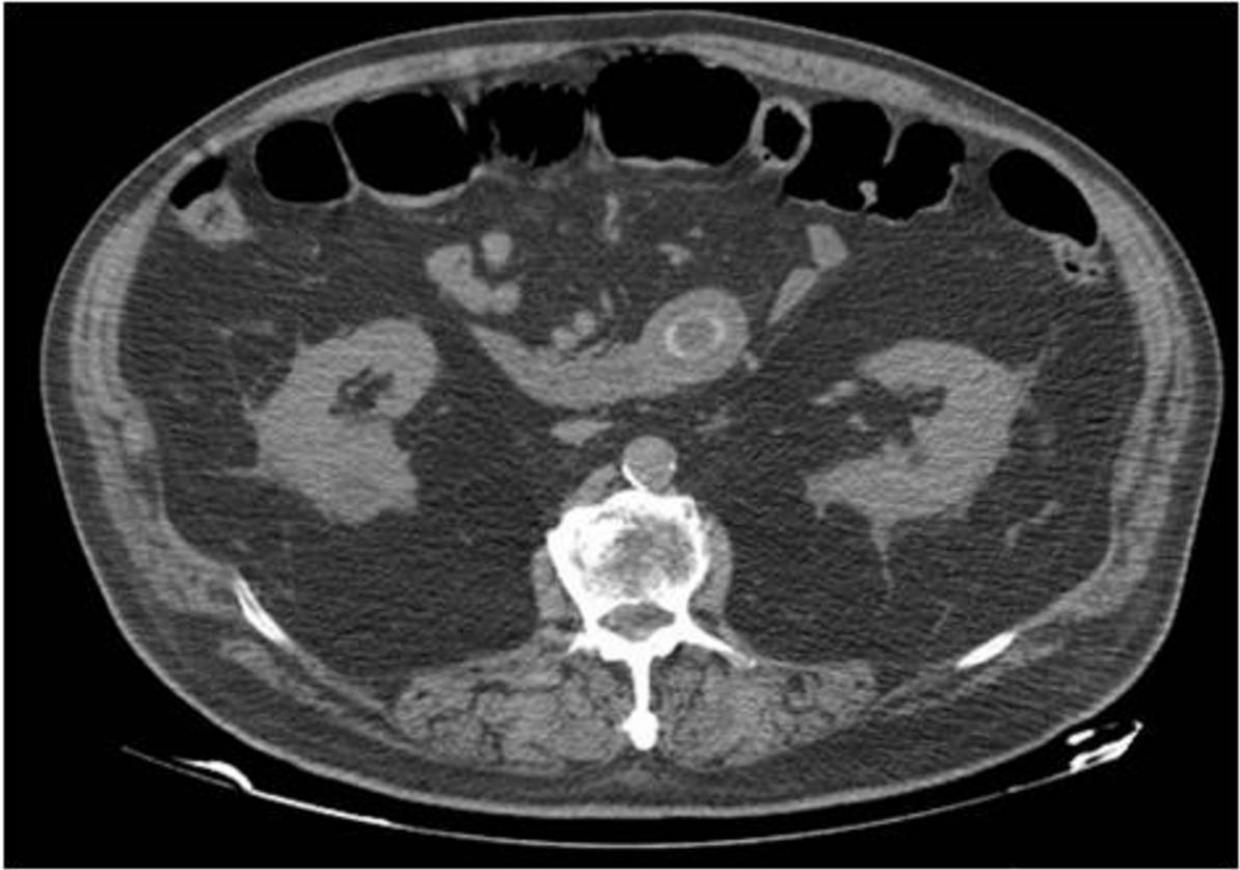
**Fig. 6:** RIGLER SIGN - Abdominal CT, lung window, of a patient with a perforated sigmoid colon tumour: Air is seen outlining the inside and outside of the bowel wall - CT equivalent of the Rigler sign.



**Fig. 7:** RIGLER'S TRIAD - Contrast-enhanced abdominal CT of a patient with gallstone ileus; coronal reformation: There is air in the gallbladder (pneumobilia) and communication between its lumen and the second part of the duodenum (cholecystoduodenal fistula).



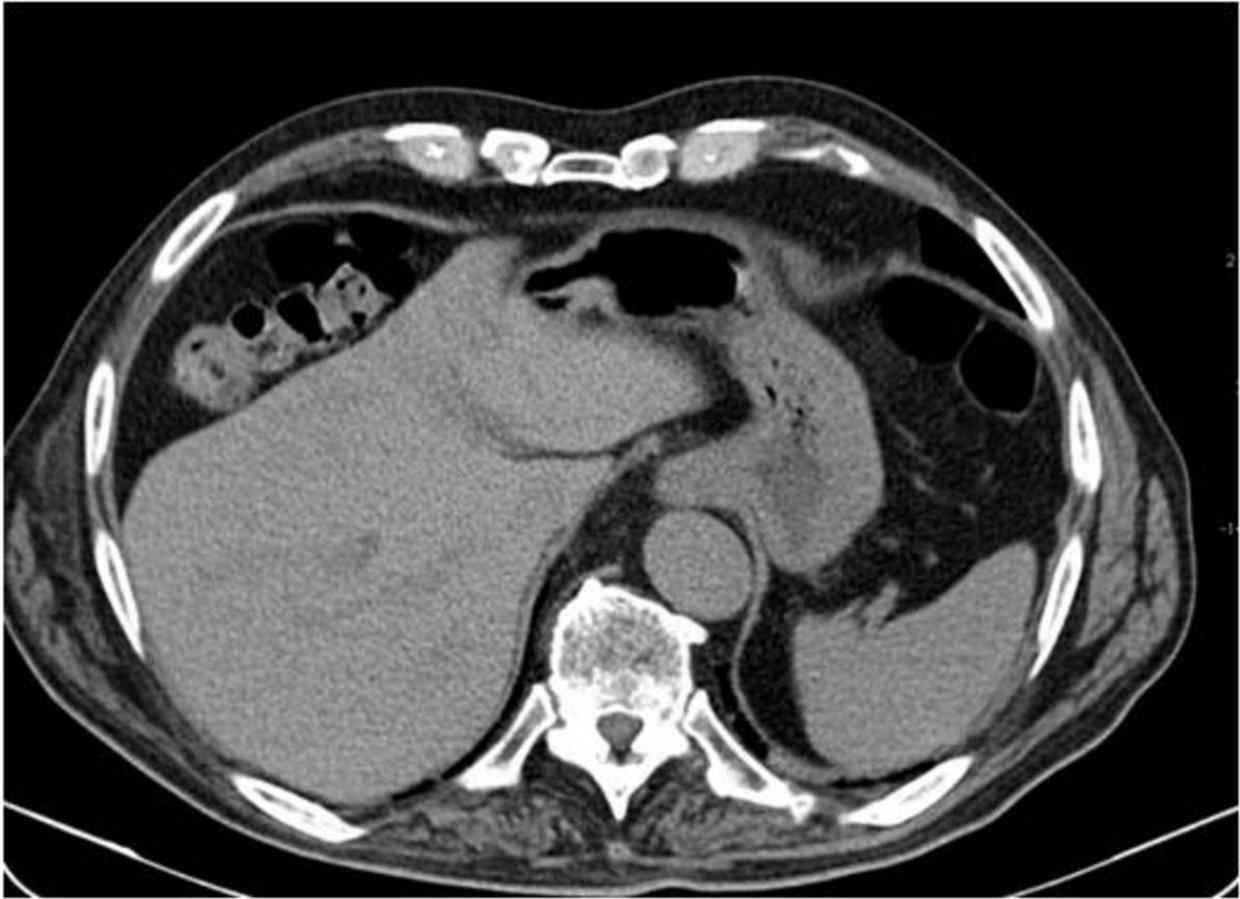
**Fig. 8:** RIGLER'S TRIAD - Contrast-enhanced abdominal CT of the same patient in fig.7, coronal reformation: Air-filled dilated small bowel loops.



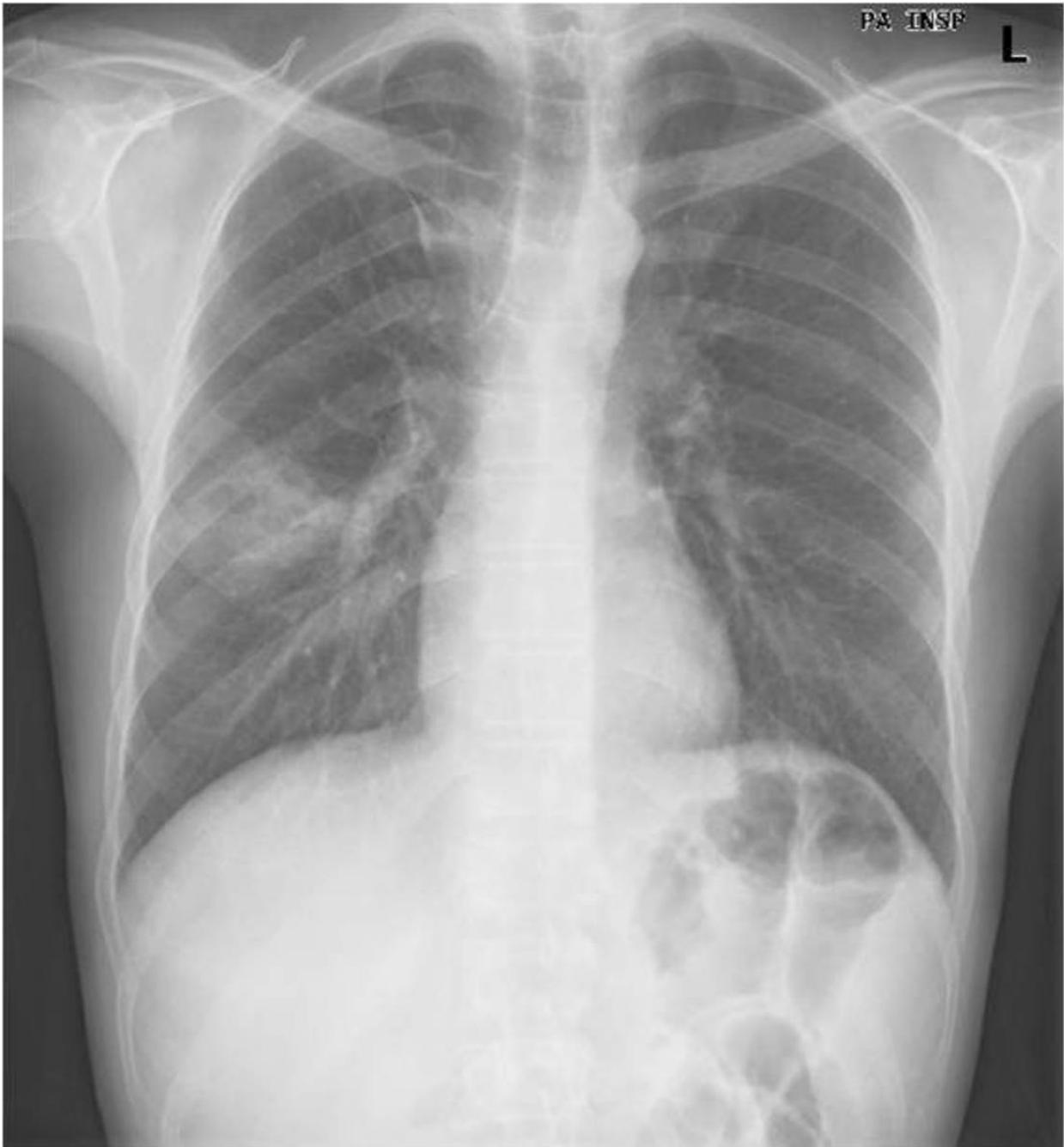
**Fig. 9:** RIGLER'S TRIAD - Unenhanced abdominal CT of the same patient in figs. 7-8: 2cm-wide elliptical gallstone impacted at the distal jejunum.



**Fig. 10: CHILADITI SIGN** - Abdominal radiograph: Visualization of a gas filled transverse colon interpositioned between the right hemidiaphragm and the liver in a patient without symptoms - Chilaiditi sign.



**Fig. 11: CHIL Aiditi SIGN** - Unenhanced abdominal CT of the same patient in fig.10: Transverse colon is seen anteriorly to the right hepatic lobe - CT equivalent of the Chilaiditi sign.



**Fig. 12:** HAMPTON HUMP - PA Chest x-ray: In the middle field of the right lung there is a wedge-shaped heterogeneous opacity with a large pleural base and the apex towards the right pulmonary hilum - Hampton hump. An azygos fissure is also seen.



**Fig. 13:** HAMPTON HUMP - CT pulmonary angiogram of the same patient: There is a right lower lobe consolidation with air bronchogram, with a pleural base and apex towards the hilum; a filling defect (thrombus) in the artery leading to the consolidated lung (pulmonary infarct) is seen - the CT equivalent of the Hampton hump.

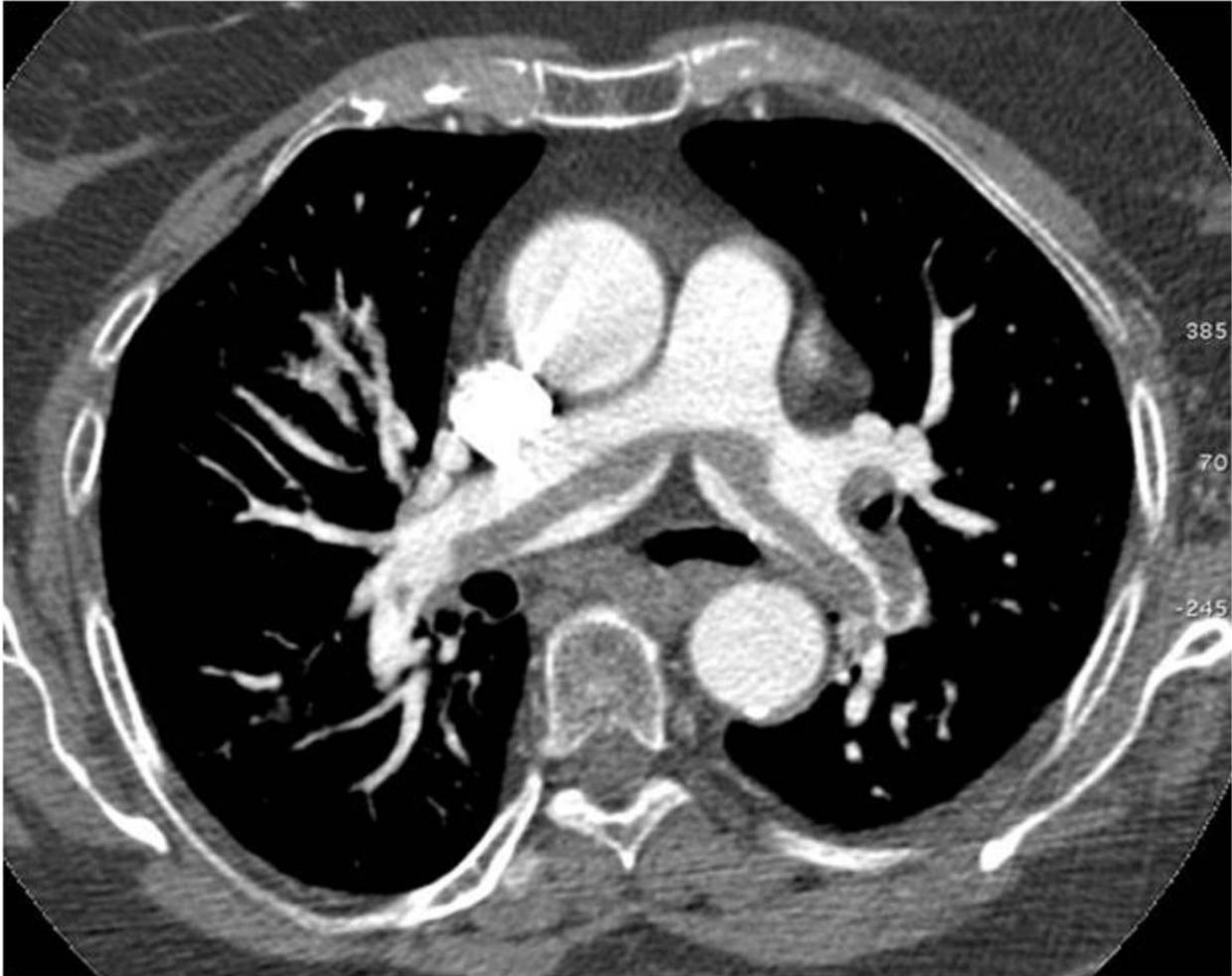


**Fig. 14: FLEISHNER SIGN** - PA chest radiograph of a patient with pulmonary hypertension after episodes of pulmonary embolism: Abnormal prominence of the main pulmonary artery. There is also a marked increase in size and density of both hila, with well-defined borders, but retaining their normal "vascular" appearance - representing enlargement of both pulmonary arteries in the setting of pulmonary hypertension - Fleischner sign. There is also "sausage-like" enlargement of the right descending pulmonary artery.



**Fig. 15:** FLEISCHNER SIGN - Lateral chest radiograph of the same patient in fig.14: Marked increase in size and density of both hila, with well-defined borders, but retaining

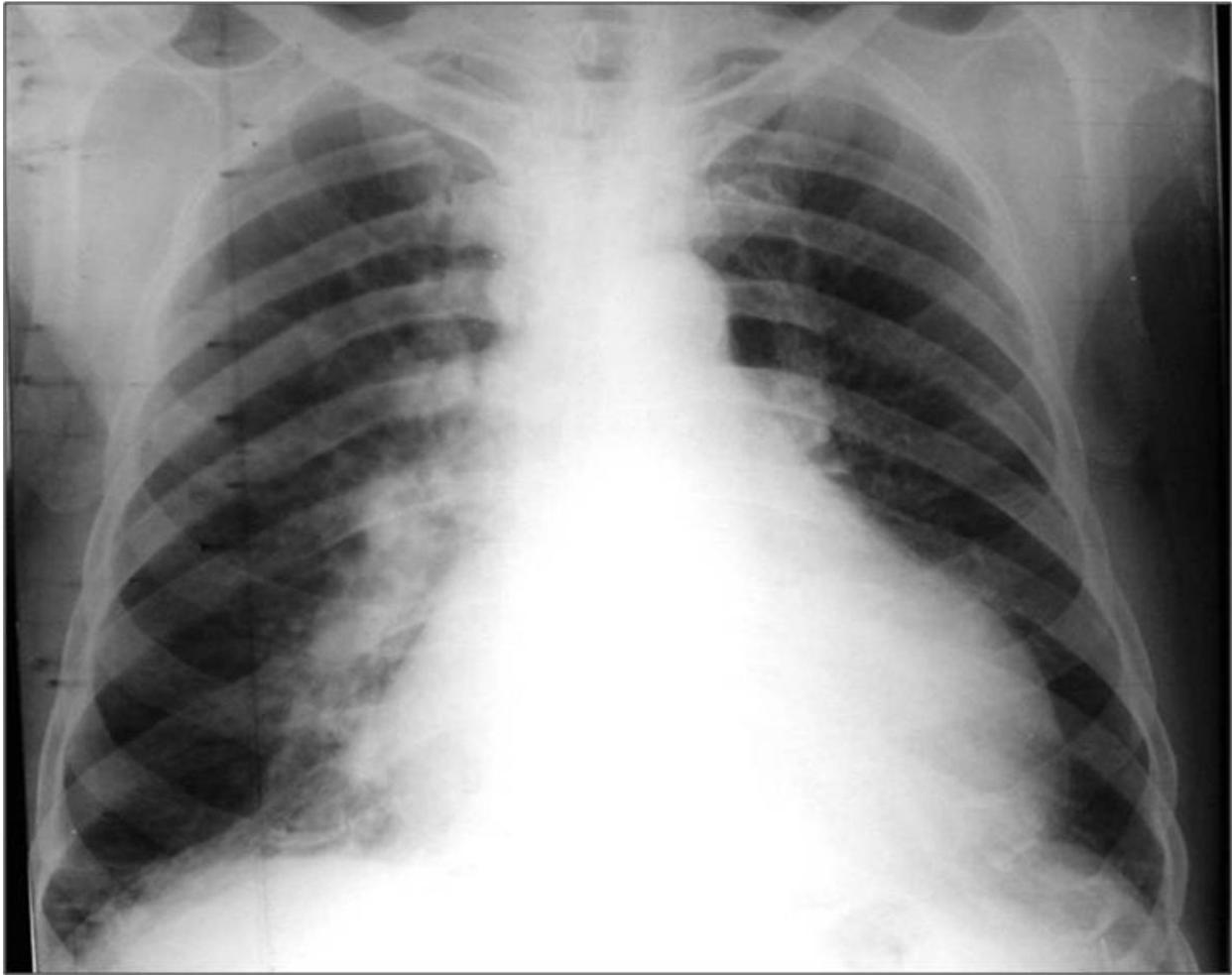
their "vascular" appearance - representing enlargement of both pulmonary arteries in the setting of pulmonary hypertension - Fleischner sign.



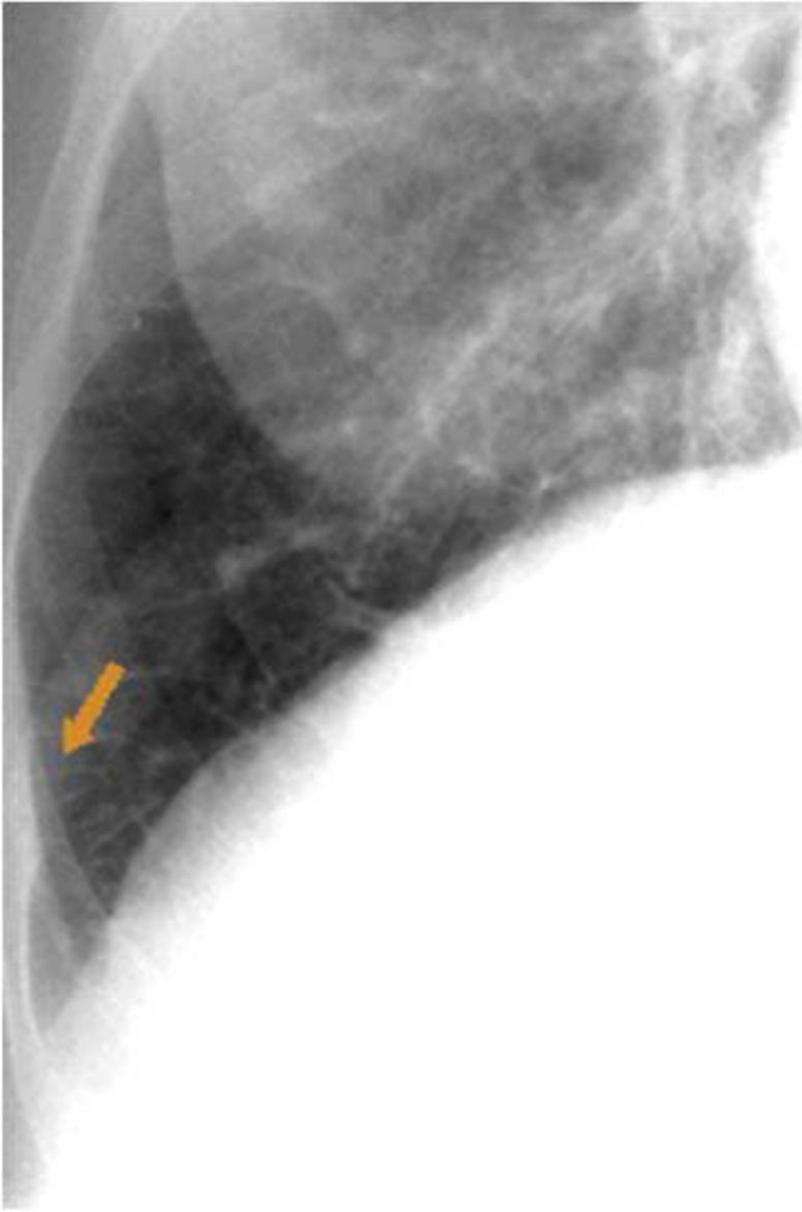
**Fig. 16: FLEISCHNER SIGN** - CT pulmonary angiogram of another patient with pulmonary embolism: Enlargement of right and left pulmonary arteries caused by a central linear intraluminal filling defect reaching both pulmonary arteries (saddle embolus)- CT equivalent of the Fleischner sign.



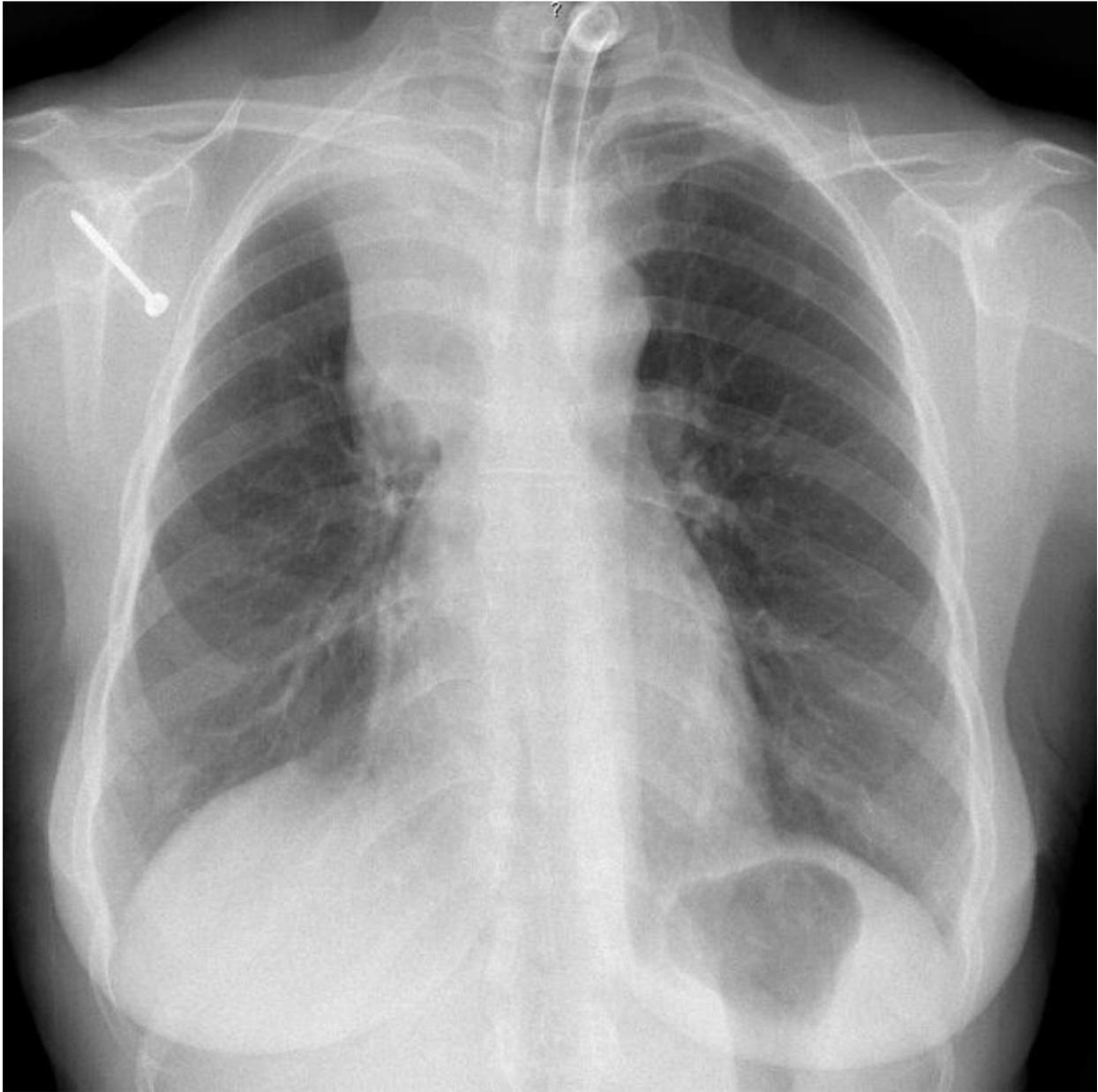
**Fig. 17: WESTERMARK SIGN** - PA chest radiograph of a patient with pulmonary embolism: There is an area of pulmonary radiolucency at the medial half of the upper field of the left lung - the Westermark sign.



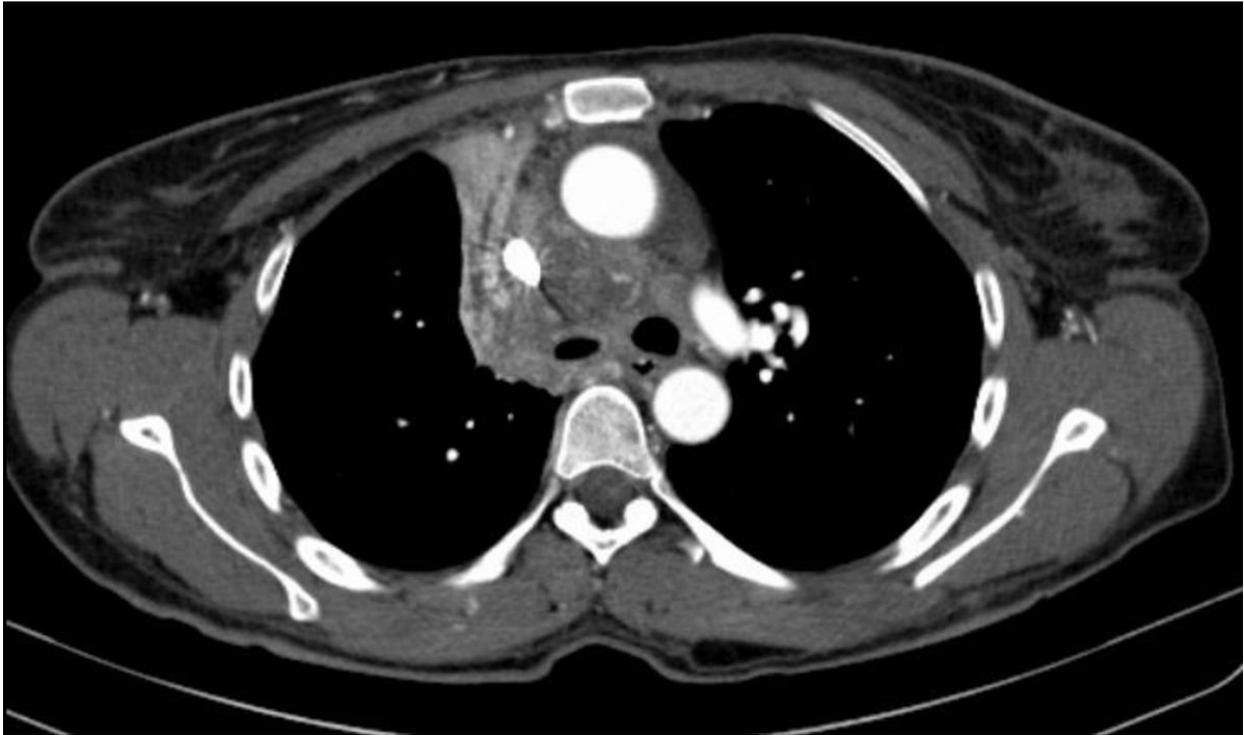
**Fig. 18: KERLEY LINES** - Chest radiograph of a patient with cardiogenic interstitial pulmonary edema: There is enlargement and indistinctness of the hila, cardiomegaly, increased size of the upper lung vasculature and a linear pattern at the costophrenic angles - Kerley B lines.



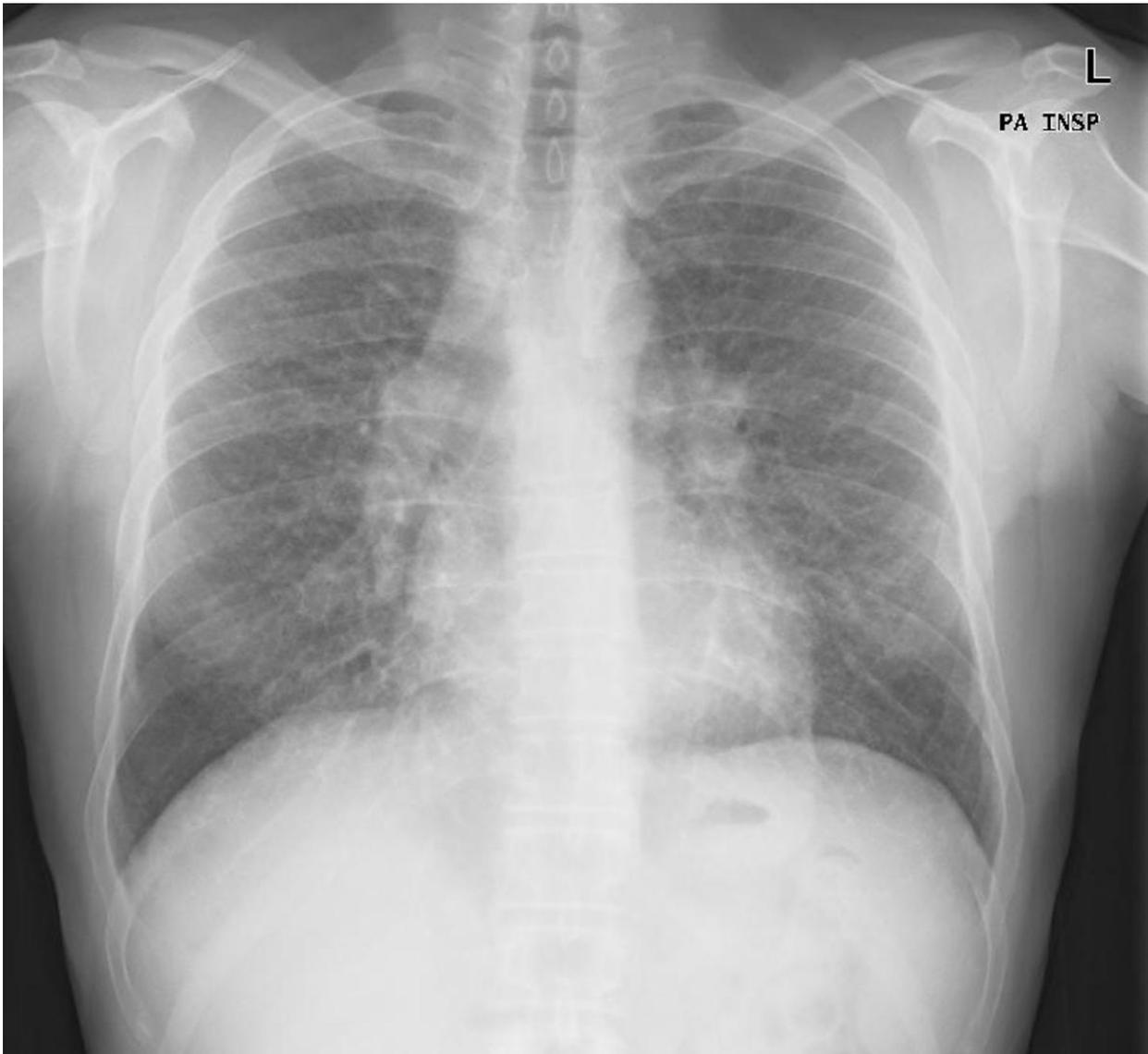
**Fig. 19: KERLEY LINES** - Coned down view of the right costophrenic angle of another patient: Parallel horizontal lines in the lung periphery (arrow) - Kerley B lines



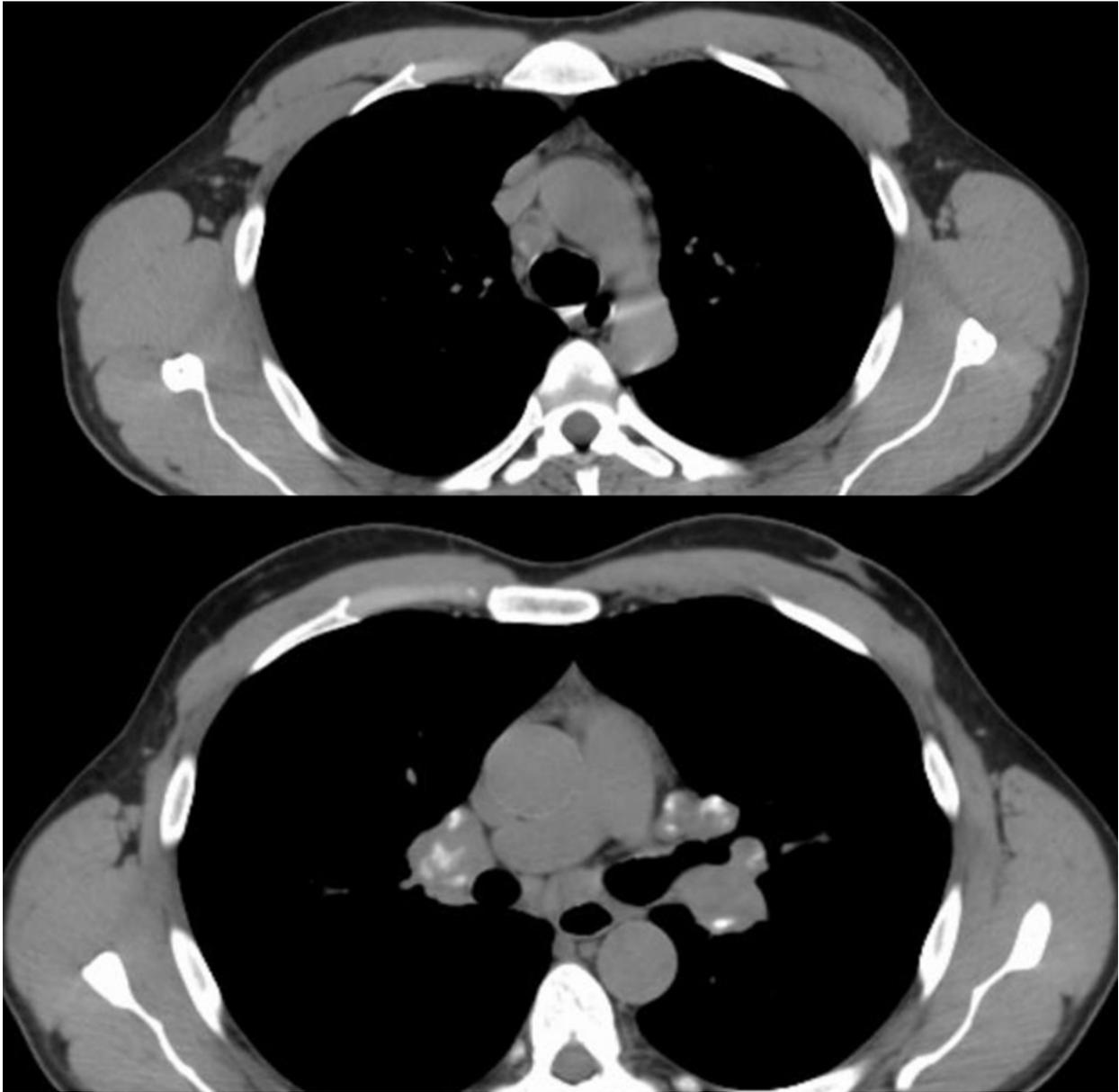
**Fig. 20: GOLDEN S SIGN** - PA chest radiograph of a patient with a right hilar carcinoma and right upper lobe collapse: There's elevation of the lateral aspect of the minor fissure (due to atelectasis) and downward convexity of the medial aspect of the minor fissure (due to the hilar mass) - Golden S sign. There is also a tracheostomy tube and a screw in the right humeral head.



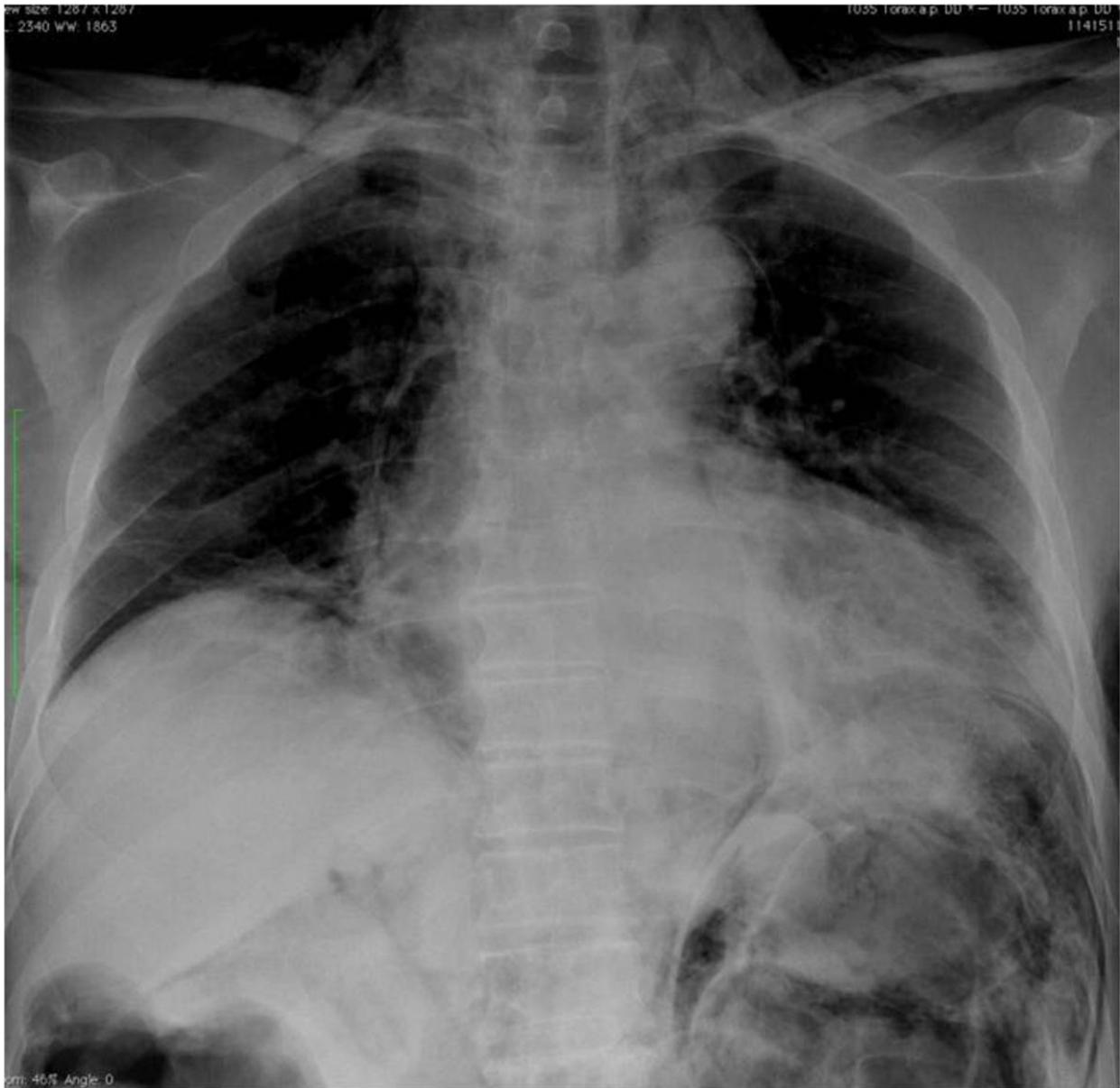
**Fig. 21: GOLDEN S SIGN** - Contrast-enhanced thoracic CT of the same patient: Anterior rotation and bowing of the minor fissure, outlining the collapsed right upper lobe; bulging of the posterior aspect of the major fissure caused by the neoplastic mass in the right hilum - CT equivalent of the Golden S sign.



**Fig. 22:** GARLAND TRIAD - Chest radiograph of a patient with stage II thoracic sarcoidosis: There is a marked thickening of the right paratracheal line and enlargement of both hila, with distinct borders and preservation of the mediastinal-hilar clear space - 1-2-3 pattern of lymph node enlargement - Garland triad. There are also diffuse increased interstitial markings.



**Fig. 23:** GARLAND TRIAD - Unenhanced thoracic CT, mediastinal window: Lymph node enlargement is visible in the right paratracheal mediastinum, right hilum and left hilum. The hilar lymph nodes are almost symmetrically enlarged and have stippled calcifications - CT equivalent of the Garland triad.



**Fig. 24: NACLERIO'S V SIGN** - PA chest radiograph of a patient with no known cause for the pneumomediastinum: An air lucency outlining the medial portion of the left hemidiaphragm and the lower left lateral mediastinal border - Naclerio V sign. There is also subcutaneous emphysema in the neck and pneumoperitoneum - Rigler sign.



**Fig. 25: NACLERIO'S V SIGN:** Unenhanced thoracic CT, coronal reformation, lung window, of the same patient in fig.24: Air lucency outlining the medial portion of the left hemidiaphragm and the lower left lateral mediastinal border - CT equivalent of the Naclerio V sign. There is air tracking to the supraclavicular fossae (subcutaneous emphysema) and pneumoperitoneum.



**Fig. 26: CODMAN TRIANGLE** - Right knee radiograph of a patient with an osteosarcoma: There is a large osteolytic lesion in the distal metadiaphysis of the femur, with a wide zone of transition and ill-defined margins, a soft-tissue mass and a triangle shaped elevation of the periosteum - Codman triangle.



**Fig. 27: TERRY THOMAS / DAVID LETTERMAN SIGN** - Coronal CT of the wrist in a patient with wrist pain and disability: Widening of the joint space between the scaphoid and lunate (4mm), seen with rotatory subluxation of the scaphoid (scapholunate dissociation) - Terry Thomas / David Letterman sign.



**Fig. 28:** TERRY THOMAS and DAVID LETTERMAN



**Fig. 29:** BAASTRUP SIGN - Sagittal and coronal CT of the lumbar spine: Close approximation and contact of adjacent spinous processes of L2-L3, L3-L4 and L4-L5 with resultant flattening and reactive sclerosis of the apposing interspinous surfaces - Baastrup sign.

## Conclusion

- Numerous eponyms are encountered in radiologic signs. Familiarity with these signs and a greater understanding of the origin of the eponym helps in honoring those who have brought outstanding breakthroughs to nowadays medicine and radiology.

## Personal information

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