Reminding the Pulmonary hila: From anatomy to pathology

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Learning objectives

1. Describe the pulmonary hila, showing its normal appearance and anatomical representation in both conventional radiography and CT

2. Propose a systematic approach to hilar evaluation

3. Demonstrate pathologies that may present with hilar abnormalities

Background

The pulmonary hila is composed of pulmonary vessels, bronchi and their branches as well as ganglia.

The normal radiological hila is mainly the result of its vascular structures. Conventional radiography is adequate for the detection of hilar masses and other major abnormalities, being the first and the most widely used of hilar evaluation.

CT, especially with intravenous contrast, is the most sensitive exam in the detection of hilar abnormalities.

Findings and procedure details

1. NORMAL HILA

1.1 Chest Radiograph

The plain radiograph can provide important details about the pulmonary hila, but one should begin to assure the technical quality criteria are met, especially that the patient is not rotation, creating pseudoassimetric hila.

The hila should be evaluated in their simetry, position, morphology, dimensions and opacity.

1.1.1. Frontal radiograph

In the chest radiograph, the hila represent the pulmonary vascular pedicle composed by pulmonary arteries and veins - radiological hila (Fig.1). The bronchi, filled with air, become a radiotransparent stripe separating the hila from the mediastinum.

The right hilum is lower than the left in 97% of cases and assumes the shape of a buterfly or an inverted "C". The left hilum has a "comma" shape.

Fig. 1: Plain frontal radiograph demonstrating a normal hila.
References: - /PT

The right hilum (Fig. 2) is composed superiorly by the truncus anterior and the right superior pulmonary vein and inferiorly by the interlobar pulmonary artery. This artery should measure (transversal measure) not more than 16 mm in men and 15 mm in women. A concave angle should be identified where the superior pulmonary vein crosses the interlobar pulmonary artery - hilar angle. This angle can become convex in cases of adenopathies or hilar masses.

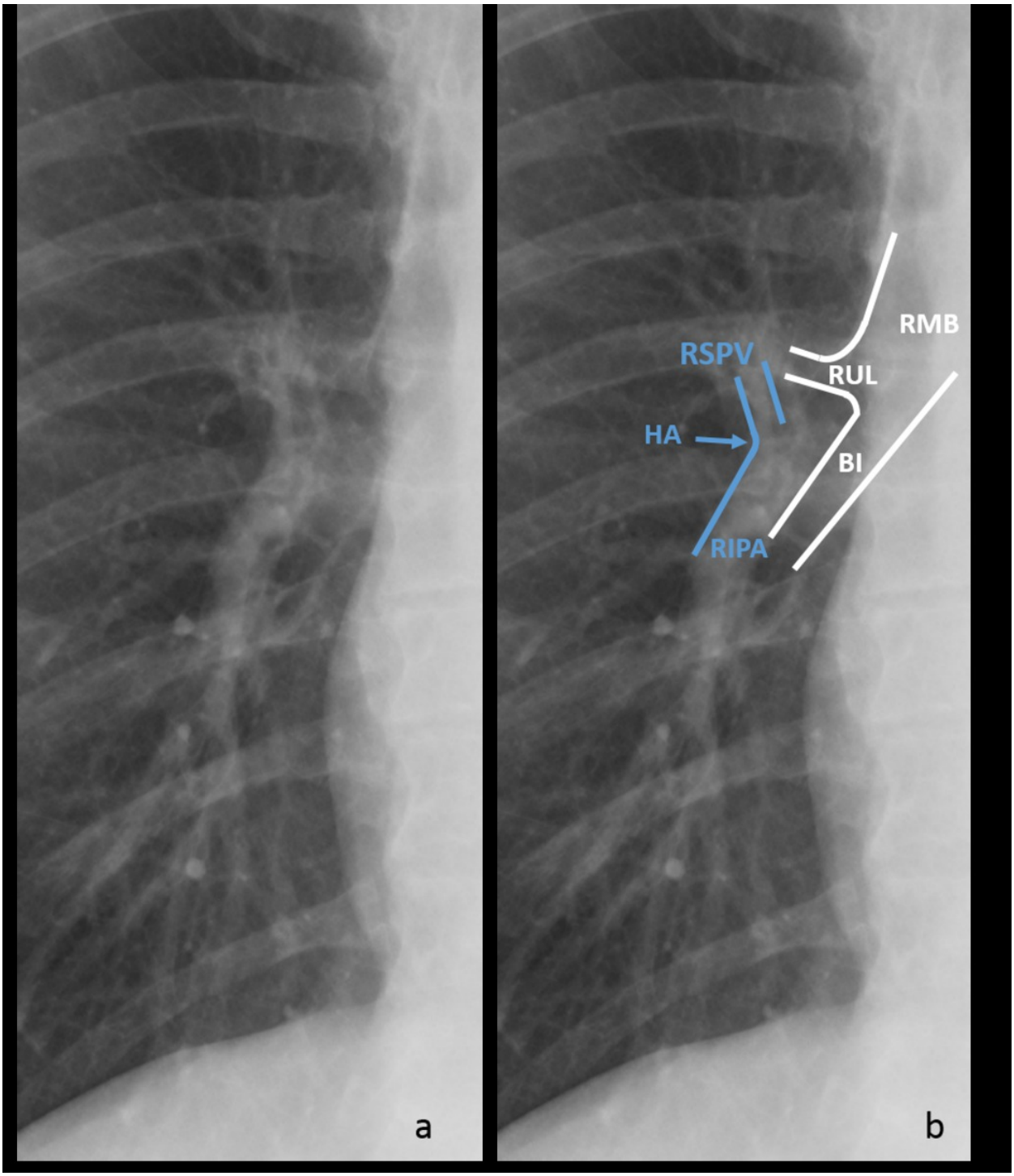


Fig. 2: Normal right hilum in a plain radiograph (a) and the corresponding anatomical representation (b). HA: Hilar angle; RSPV: Right superior pulmonar vein; RIPA: Right inferior pulmonar artery; RMB: Right main bronchus; RUL: Right upper lobe bronchus; BI: Bronchus intermedius
References: - /PT

On the left hilum (Fig.3), the pulmonary artery, originated in the pulmonary trunk, crosses above the left main and upper lobe bronchus to bifurcate in the upper and interlobar (or inferior) pulmonary arteries, which are posterior and lateral to the the bronchi.

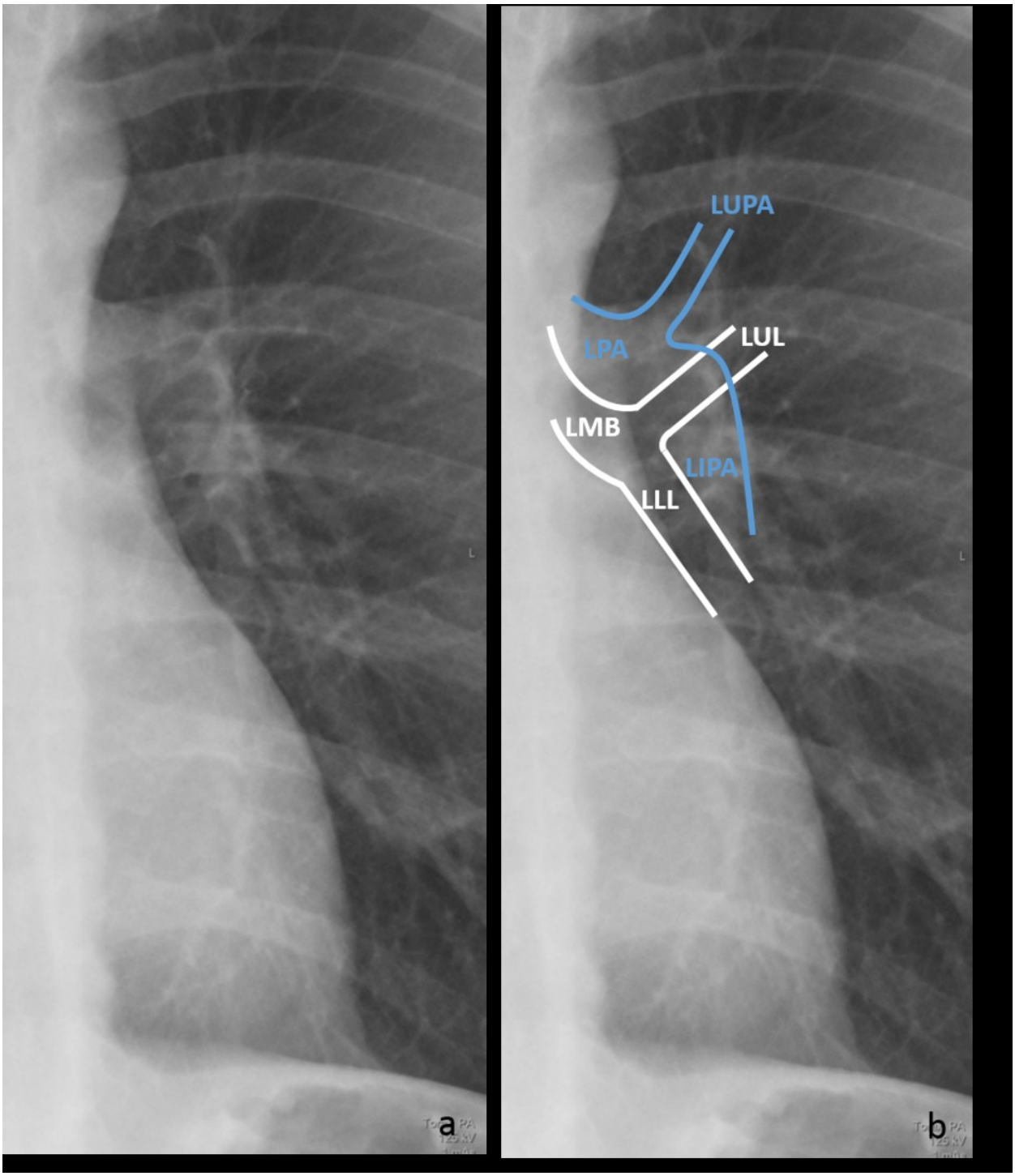


Fig. 3: Normal left hilum in a plain radiograph (left) and the corresponding anatomical representation (right). LPA: left pulmonar artery; LUPA: Left upper pulmonar artery; LIPA: Left inferior pulmonar artery; LMB: Left main bronchus; LUL: Lelft upper lobe bronchus; LLL: Left lower lobe bronchus.

References: - /PT

1.1.2. Lateral radiograph

On the lateral radiograph (Fig. 4), the hila are partly superimposed, although some parts can be distinguished. Identification of the bronchi should be the first step. The right hilum is projected anterior to the carina in an oval shape, while the left pulmonary artery assumes a comma-shape crossing the air column and becoming posterior and superior.

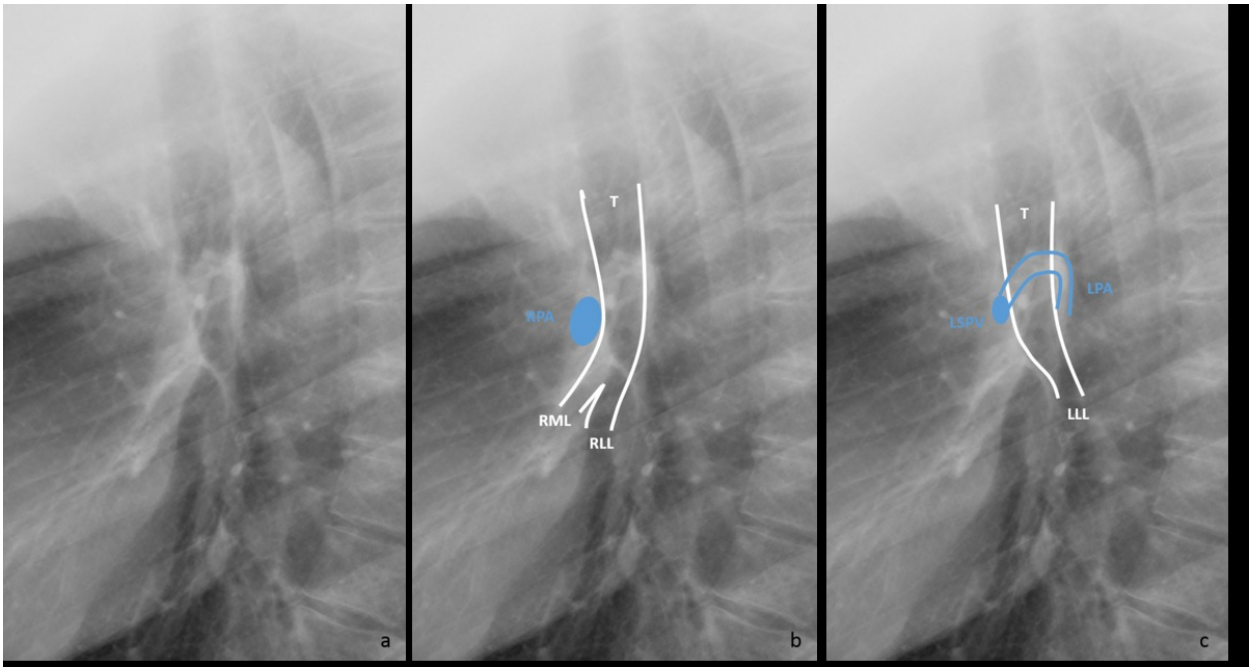


Fig. 4: Plain left lateral radiograph demonstrating the normal hila (a) and the corresponding anatomical representation of the right hilum (b) and the left hilum (c). T: Trachea; RML: Right middle lobe bronchus; RLL: Right lower lobe bronchus: RPA: right pulmonar artery; LLL: Left lower lobe bronchus; LSPV: Left superior pulmonar vein; LPA: Left pulmonar artery.
References: - /PT

1.2. Chest CT

1.2.1 Bronchi

Identification of the bronchi is the first step in the analysis of the hila in a chest CT since they have the most consistent branching pattern. A 5 mm slice thickness is adequate for proper identification of segmental bronchi.

The bronchi with horizontal or near horizontal orientation will appear as tubular structures while bronchi orientated vertically will be circular on axial slices.

Right Hilum

The right main bronchus (Fig.5), originated from the trachea at the level of the carina, has a short extension, rapidly dividing in the right upper lobe (RUL) bronchus and bronchus intermedius (BI). The RUL bronchus, usually at or immediately inferior to the level of the carina will split into three segmental branches (apical, anterior and posterior). The bronchus intermedius is longer than the RUL bronchus and divides into the middle lobe (and further into medial and lateral segments) and lower lobe bronchi (which originates superior segment and then divides into four segmental branches: medial, anterior, lateral and posterior).

Left Hilum

The left main bronchus (Fig.5) is longer than the right so its division into left upper and lower branches will be identified at a level lower than the carina. The left upper lobe (LUL) bronchus in the majority of cases will branch into a superior trunk (and further spliting in the anterior and apical-posterior segmental bronchi) and lingular bronchi. The left lower lobe (LLL) bronchus trifurcates in the basal segmental bronchi (antero-medial, lateral and posterior).

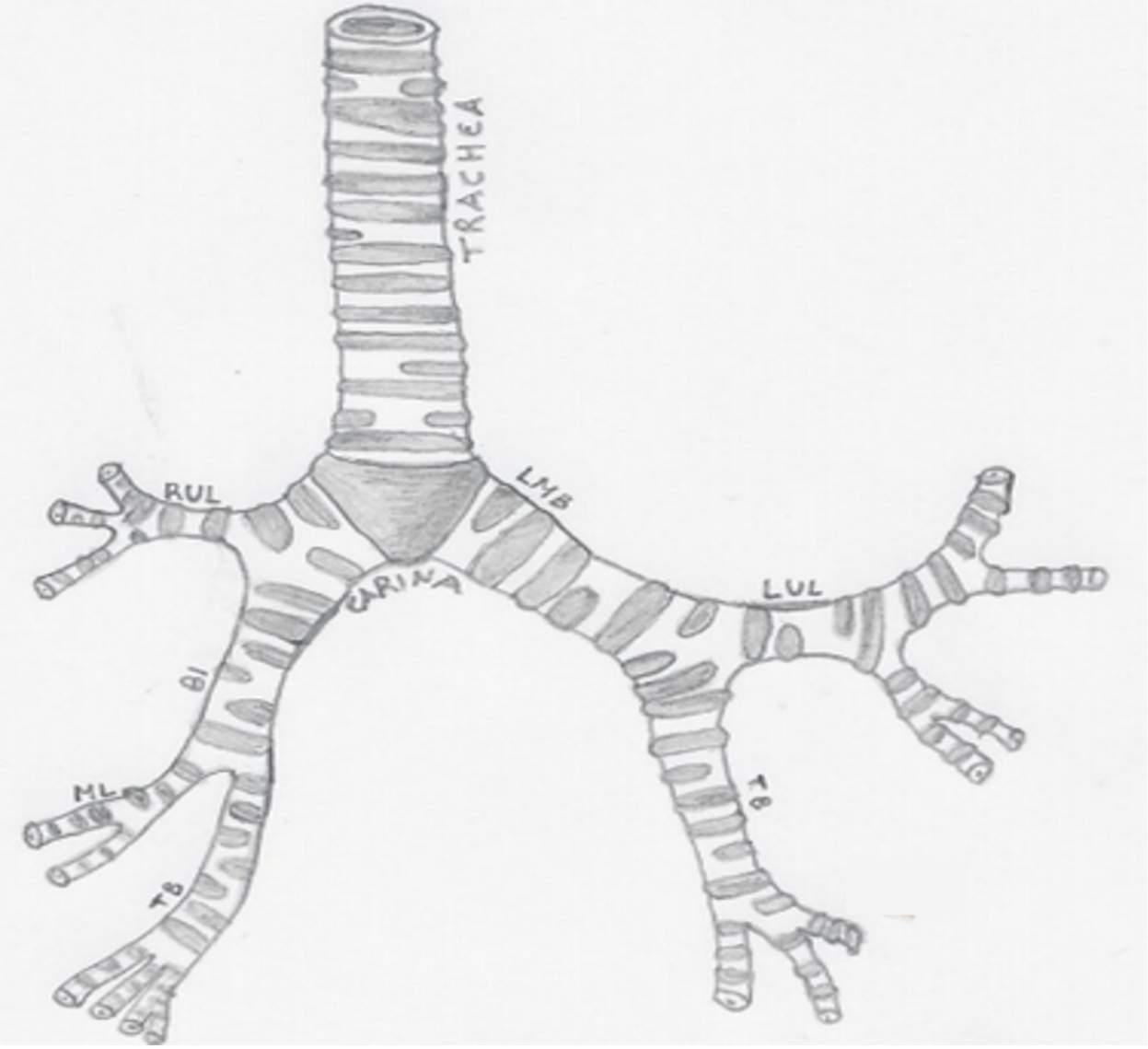


Fig. 5: Schematic representation of the bronchial anatomy. RUL: Right upper lobe bronchus; BI: Bronchus Intermedius; ML: Middle lobe bronchus; TB: Truncus basalis; LMB: Left main Bronchus; LUL: Left upper lobe bronchus
References: - /PT

1.2.2. Vessels

The hilar vessels have a constant relation to their adjacent bronchi (Figs. 6 - 9).

Right Hilum

The right pulmonary artery has an horizontal course and bifurcates into the truncus anterior and interlobar artery. The truncus anterior can be identified anterior to the RUL

bronchus, appearing with a similar size and shape to the bronchus. The interlobar artery runs anterior and lateral to the bronchus intermedius, branching in the right middle lobe pulmonary artery that runs parallel to the RML bronchus and the lower lobe artery that runs vertically. The right superior pulmonary vein is lateral to the BI, then becoming anterior to RUL and truncus anterior to enter the left atrium. The inferior pulmonary veins run horizontally, joining themselves to form the inferior pulmonary vein that is posterior to the lower lobe bronchi and arteries and enter the left atrium from below.

Left Hilum

On the left hilum, more variabilty exists in the relationship between vessels and airways. The left pulmonary artery, originated in the pulmonary trunk, branches to give the left superior pulmonary artery and the left interlobar pulmonary artery. The left interlobar artery is posterior to the left upper bronchus and then becomes postero-lateral to the lingular bronchus. At the level of the basal segmental bronchi, the branches of the pulmonar artery run posteriorly to the bronchi. The superior pulmonary vein is anterior to the lingular bronchi and then becomes anterior to the LUL. The left inferior pulmonary vein can be seen on the left of the the descending aorta, to join the left atrium from below.

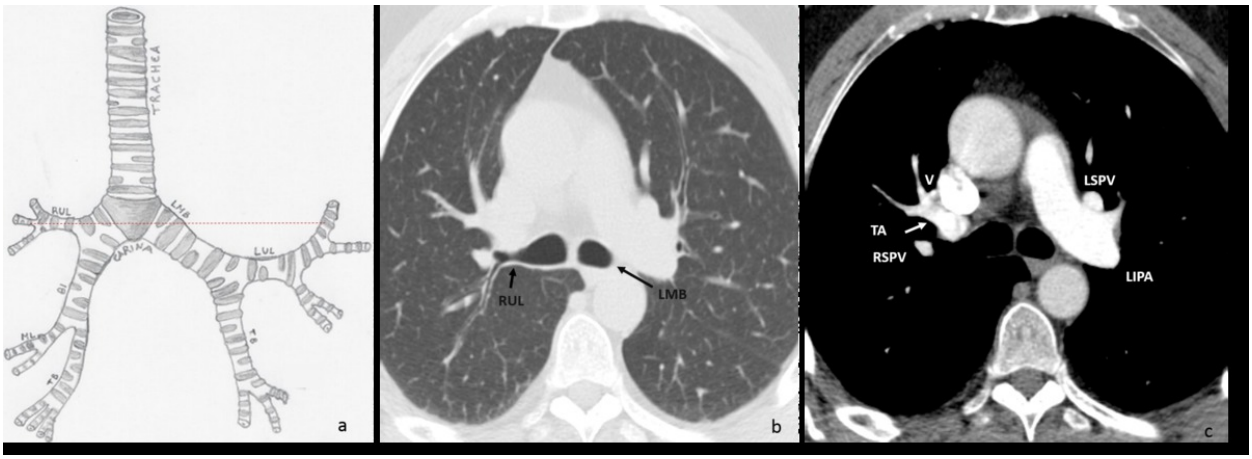


Fig. 6: Level of the Right Upper Lobe (RUL) bronchus and left main bronchus (LMB) (a and b): On the lung window (b) the RUL bronchus and its segmental bronchi can be identified originating from the right main bronchus. The left main bronchus (LMB) still remains undivided at this level. On the mediastinal window (c) the truncus anterior (TA) lies anterior to the RUL and can be seen branching on this image. The right superior pulmonar vein (RSPV) can be seen between the division of the RUL in the anterior and posterior segmental bronchi. Between the TA and the superior vena cava the apical-anterior vein (V) can be identified. On the left hilum, the left interlobar pulmonar artery (LIPA) can be seen branching, with the left superior pulmonar vein (LSPV) anterior to it.
References: - /PT

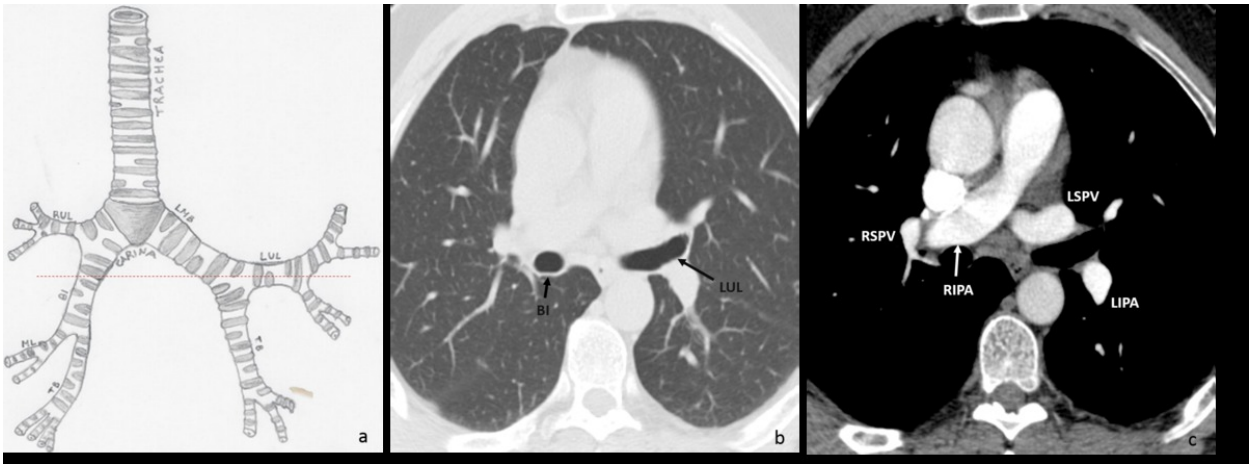


Fig. 7: Level of the Bronchus intermedius (BI) and the left upper lobe (LUL) bronchus (a and b): The right interlobar pulmonar artery (RIPA) lies anterior to the BI, while the the right superior pulmonar artery (RSPV) lies laterally to these structures. The left inferior pulmonar artery (LIPA) lies posterior to the LUL bronchus and the left superior pulmonar vein (LSPV) anterior to both.
References: - /PT

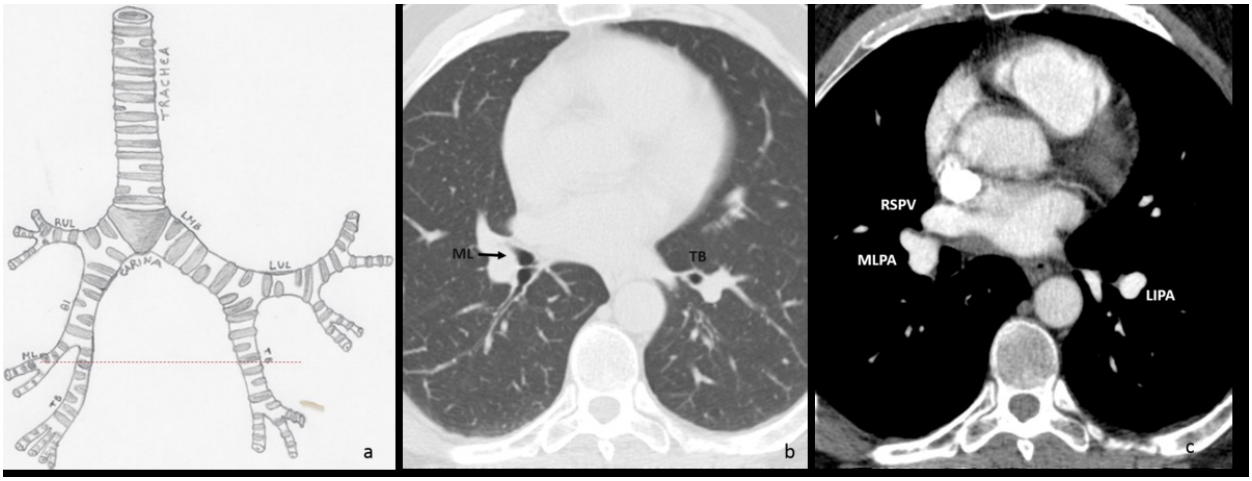


Fig. 8: Level of the middle lobe bronchus (ML) and the left Truncus Basalis (TB) (a and b): The lower lobe pulmonar artery and the right middle lobe artery (MLPA) can be seen originating from the right interlobal pulmonar artery. The right superior pulmonar vein, anterior to them, can be seen entering the left atrium. The left inferior pulmonar artery (LIPA) lies lateral to the TB.
References: - /PT

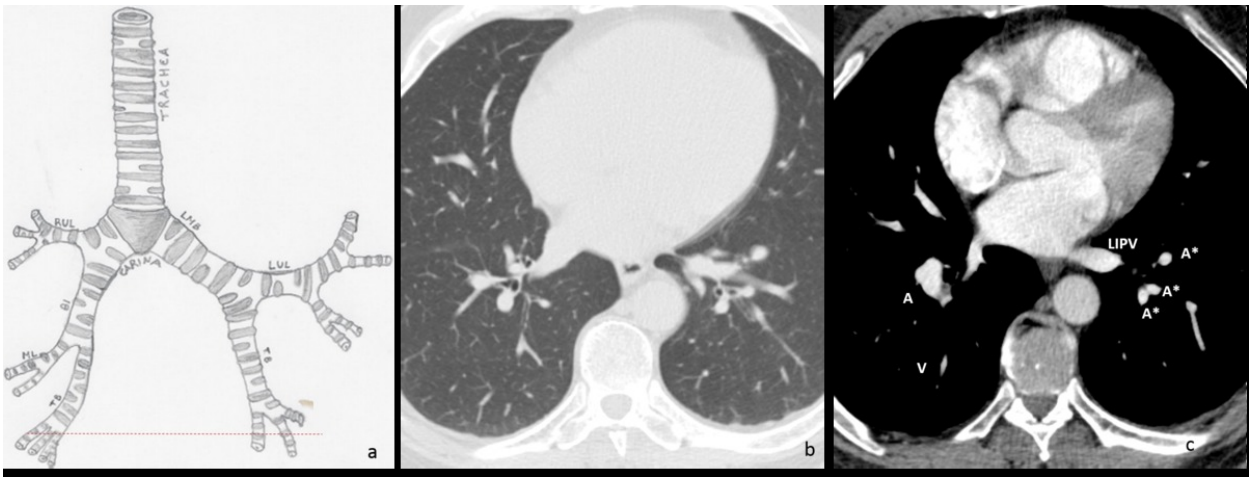


Fig. 9: Bellow the branching of the Truncus Basalis (TB) (a and b), the right lower lobe pulmonar artery is beginning to branch (A), laterally to the bronchi. The arteries at this level are imaged in cross-section, while the inferior pulmonar veins (V) appear as tubular due to their horizontal postion at this level and can be seen postero-medially to the bronchi, joining the left atrium from below. Branches of the left interlobar pulmonar artery (A*), imaged in cross-section, are seen laterally to the bronchi. The left inferior pulmonar vein (LIPV) runs medially to them, laterally to the descending aorta to enter the left atrium.
References: - /PT

1.2.3. Hilar Lymph Nodes

The hilar lymph nodes can be found in constant locations so the radiologist should know where to search for them. The use of intravenous contrast enhances the vascular structures allowing better differentiation from lymph nodes.

The normal hilar nodes have a short axis of 3 mm or less. Three regions are described in which larger nodes can be commonly found: at the level of the bronchus intermedius and bifurcation of the right pulmonary artery; at the right middle lobe bronchus and the the LUL and lingular bronchi. Except for the first of these locations, in every other hilar locations, nodes are considered pathological if they exceed the 10 mm threshold.

Right Hilum

Other locations in which ganglia can usually be identified are, on the right hilum: (1) adjacent to the segmental branches of the RUL; (2) lateral to the bifurcation of the main pulmonary artery; (3) anterolateral to the bronchus intermedius and medial to the superior pulmonary vein branches; (4) medial or lateral to the posterior wall of the bronchus intermedius (hilar angle); (5) lateral to the origin of the middle and lower lobe bronchi

and medial to the interlobar pulmonary artery; (6) at the lower lobe bronchi between the bronchi and arteries; (7) anterior to the truncus basalis.

Left Hilum

On the left hilum: (1) medial and laterally to the left pulmonary artery (2) between the posterior wall of the LUL and the pulmonary artery (3) adjacent to the lingular bronchus; (4) at the lower lobe bronchi, between the bronchi and arteries; (5) anterior to the truncus basalis.

2. PATHOLOGIES THAT PRESENT WITH HILAR ABNORMALITIES

Various pathologies can be diagnosed or suspected from a chest radiograph if there are abnormalities in one or several hilar characterists: simetry, position, morphology, dimensions and opacity. Chest CT with intravenous-contrast will usually be the following step in the diagnosis.

2.1 Position

The hila can be commonly displaced in patients with atelectasis (or collapse). The hila can be elevated in cases of upper lobe colapse and depressed in cases of lower lobe atelectasis. Being the right hilum usually lower, if both present at the same level, a right upper lobe (Fig. 10) or left lower lobe atelectasis might be present. Atelectasis of the middle lobe tend not to affect the hilar position.

Furthermore, and upper lobe collapse can cause the hila to rotate outward, becoming more horizontal, whereas a lower lobe collapse can cause an inward rotation, in which the hila become more vertical.

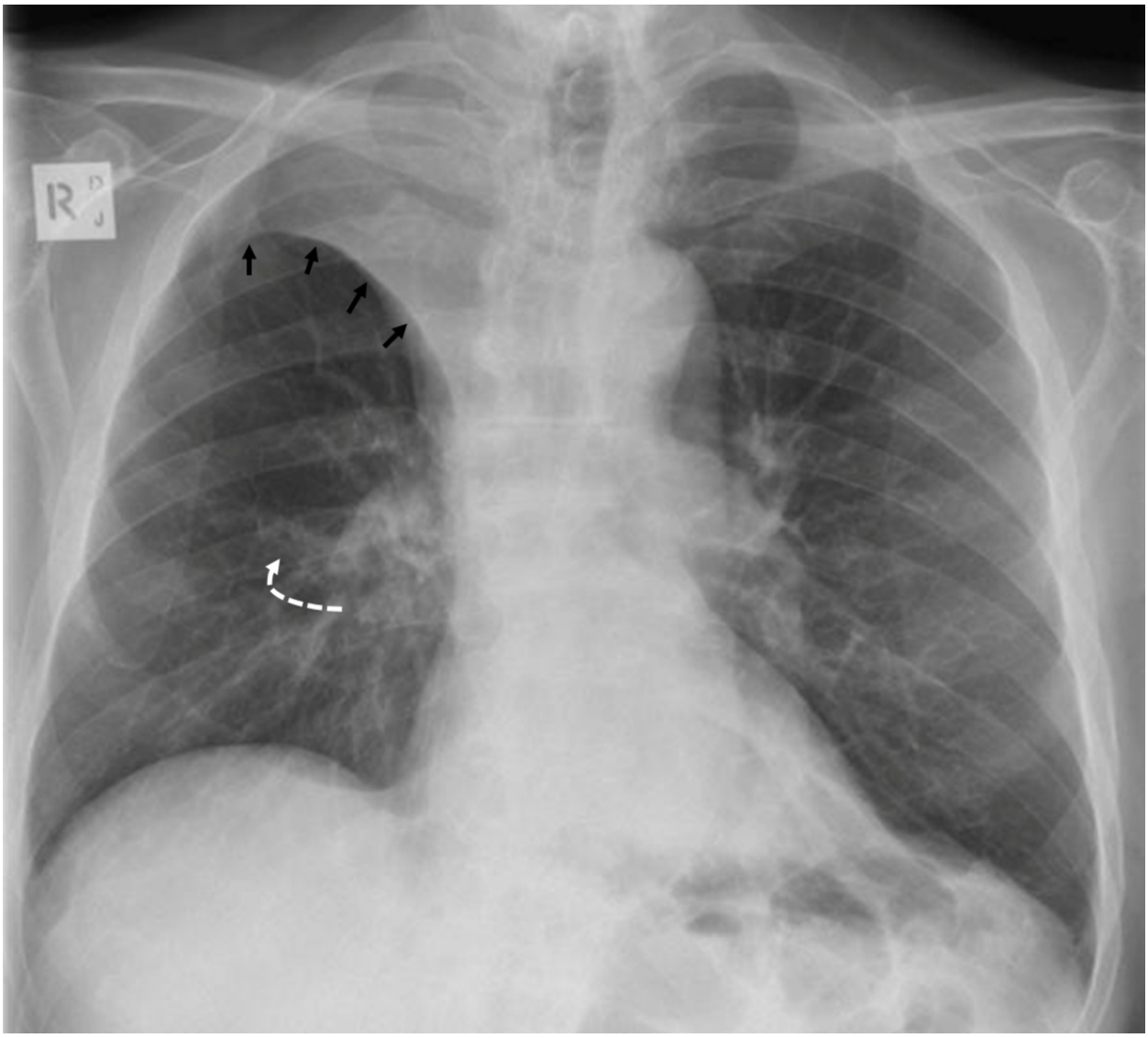


Fig. 10: Superior displacement and horizontalization of the right hilum (white curved arrow) due to atelectasis of the right superior pulmonar lobe (black arrows).
References: - /PT

2.2 Morphology

Hilar masses and adenopathies will cause abnormal, lobulated hilar contours. The hilar angle is a common location of node enlargment and should be concave in a normal chest radiograph.

Enlarged hilar nodes are shown in their expected locations as well defined, rounded and usually multiple opacities, giving the hila a polilobulated appearance. The clinical history

is very relevant in the investigation of hilar nodes enlargment. Radiologically, simmetry is an important characteristic that may narrow the differential diagnosis. The most common causes of unilateral lymph nodes enlargment are: bronchogenic carcinoma, lymph nodes metastasis, lymphoma, tuberculosis or other infections (bacterial or viral). Bilateral adenopathies can be caused by: sarcoidosis, silicosis, lymph nodes metastasis, lymphoma, amyloidosis and collagen-vascular diseases.

In patients with Sarcoidosis (Fig. 11), the presence of right paratracheal and bilateral hilar lymph node enlargement represent the **1-2-3 sign** or **Garland triad**.

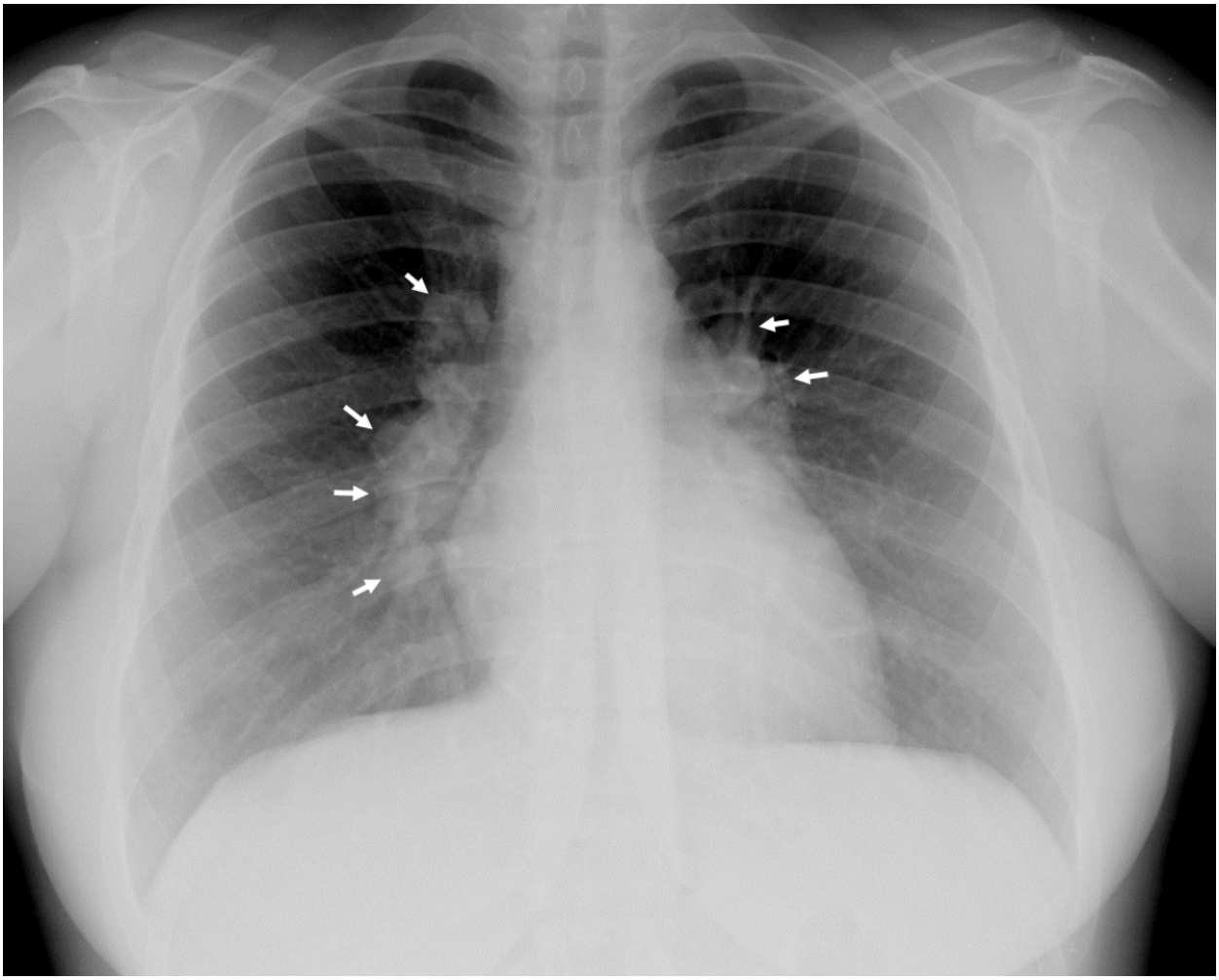


Fig. 11: The hila appear bilaterally enlarged and lobulated with smooth contours due to the presence of multiple adenopathies (white arrows). The space between the right hilum and the mediastinum is preserved. The patient had Sarcoidosis.
References: - /PT

Peripheral calcification in hilar lymph nodes, reffered to as **eggshell calfications** (Fig. 12) are frequent in Silicosis and Coal-worker Pneumoconiosis, though they might also occur in Sarcoidosis and post-irradiation Hodking disease.

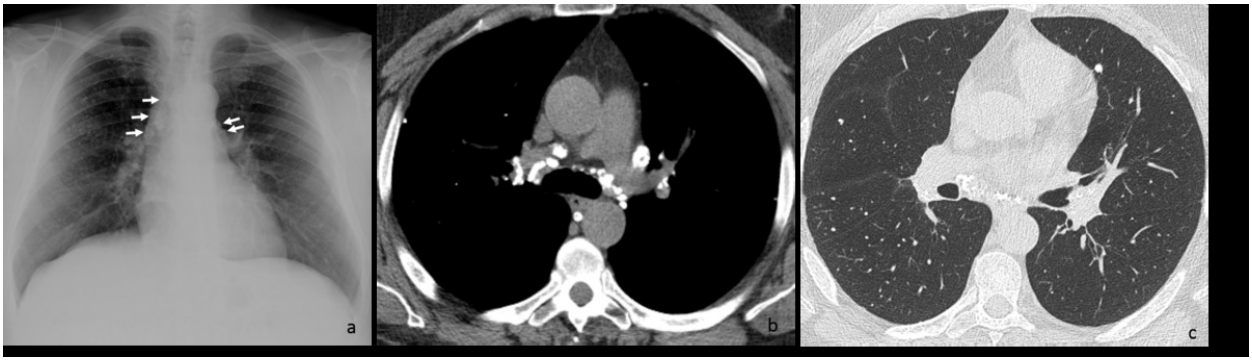


Fig. 12: The plain radiograph (a) demonstrates the presence of bilateral, regular-contour hilar nodes with peripheral calfications (white arrows). In the lung parenchima, multiple peripheral micronodes predominating in the upper and middle zones of the thorax are seen. The CT of the same patient reveals the presence of multiple hilar lymph nodes with egg-shell calcifications (b). On the lung window (c), multiple peripheral calcified micronodes are seen.
References: - /PT

In patients with Lymphoma (Fig. 13), hilar lymph node enlargement is more frequent in patients with Hodgkin disease but may also present on non-Hodgkin lymphoma.

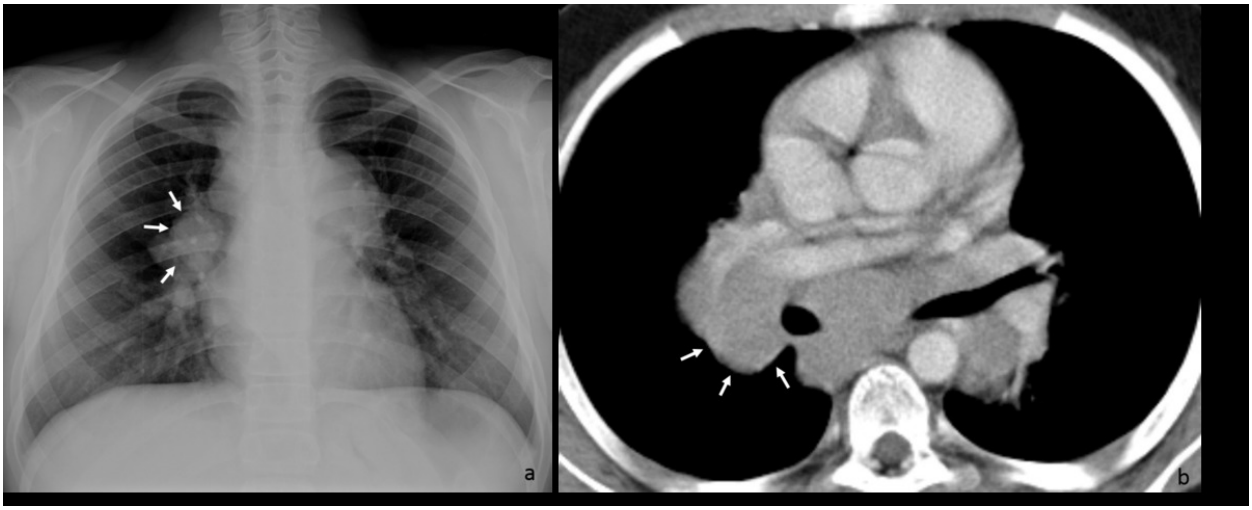


Fig. 13: The chest radiograph (a) of a young patient demonstrates enlarged and lobulated hila, with a convex hilar angle (white arrows). The CT of the same patient (b)

demonstrates the presence of multiple bilateral enlarged lymph nodes. The adenopathy located lateral to the Bronchus Intermedius (white arrows) causes the convexity in the hilar angle, observed in the radiograph. The patient had Hodgkin Lymphoma.
References: - /PT

The hilar lymph nodes are also a common location for metastasis both from pulmonary and extra-pulmonary origin. Of the latter, head and neck carcinomas, thryoid carcinomas, renal cell carcinomas, testicular carcinoma, melanoma and breast carcinomas are the most common.

Hilar masses tend to be single, have irregular contours and involve adjacent structures, frequently causing bronchial and arterial obstruction. The presence of bronchial obstruction and lung atelectasis might obscure the contours of the mass, making it more difficult to diagnose. Bronchogenic carcinoma (Fig. 14) is the most frequent cause of hilar mass. Hilar metastasis might also be found and are common in patients with lung cancer. The observation of the hilar vessels behind a mass indicate the localization of this mass either anterior or posterior to the hilum and represents the **hilum overlay sign**.

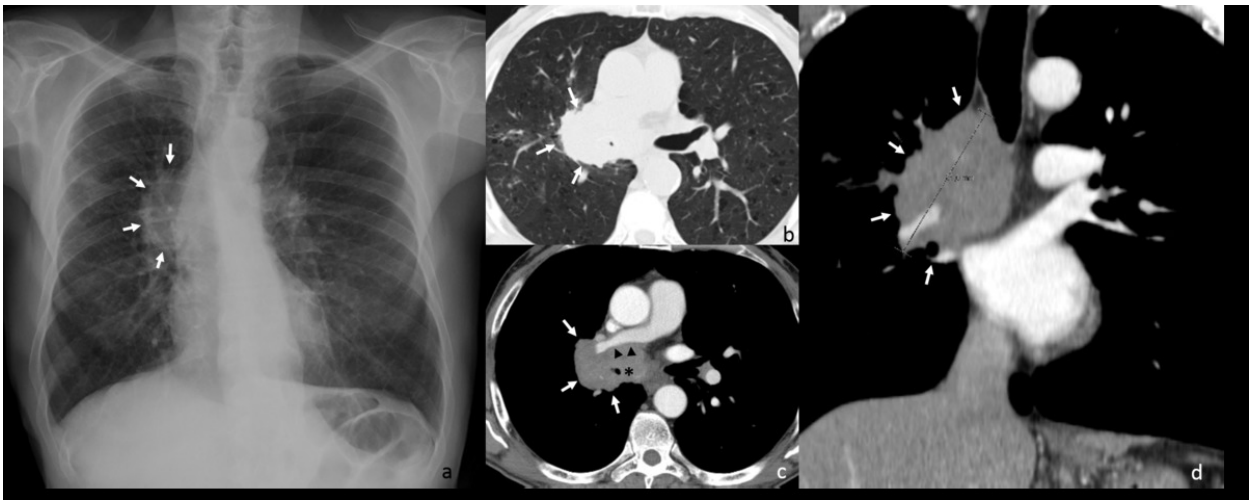


Fig. 14: Abnormality of the right hilar contour with a convex hilar angle (white arrows in a). The absence of hilar overlay sign demonstrates the hilar origin of this mass. Left traqueal deviation is also seen. The CT demonstrated the presence of a mass (white arros in b, c and) involving the right main bronchus (asterisk in c) and the right interlobar pulmonary artery (black head arrows in c). The mass proved to be a bronchogenic carcinoma.
References: - /PT

The **Golden S sign** (Fig. 15) is created when an hilar mass causes atelectasis of the upper lobe due to bronchial stenosis. An inverted "S" is apparent, with the hilar mass causing a medial convex contour and the atelectasis causing the minor fissure to be displaced upward - the lateral concave contour.

Fig. 15: The chest radiograph (a) shows an abnormal right hilar morphology due to a right hilar mass that and subsequente right upper lobe atelectasis, demonstrating the Golden S sign, in which in convex border is caused the hilar mass (white arrows) and the concave border is formed by the small cisure (arrowheads). The CT of the same patient (b) shows the tumoral mass in the right hilum(white arrows) and the collapse of the right upper lobe (arrowheads).
References: - /PT

2.3 Size

The normal hila, representing the pulmonary vessels, should gradually taper peripherically. Enlargement of the pulmonary arteries can cause increased hilar size (and density). The **hilum convergence sign** assures the vascular etiology of an hilar enlargement, distinguishing it from a mass or adenopathy if the pulmonary vessels can be seen to converge and join the dilated pulmonary artery.

Pulmonar hypertension is the most frequent cause of enlarged hilar vessels. In patients with arterial pulmonar hypertension (Fig. 16) an increased hilar size is seen along with a normal size cardiac silhouette.

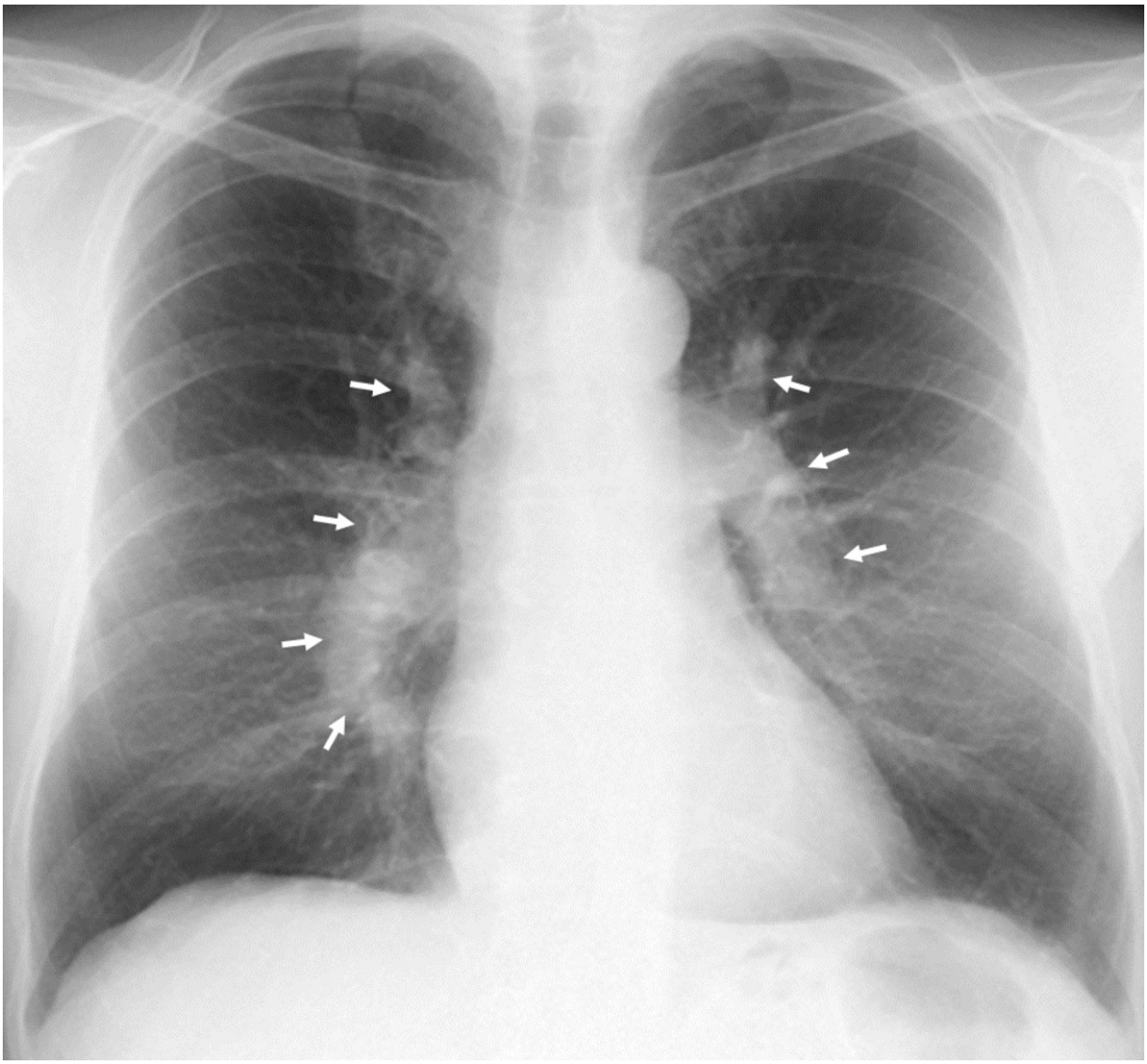


Fig. 16: The chest radiograph demonstrates a bilateral increase in the hilar size (white arrows). The hilar convergence sign confirms the vascular origin of hilar enlargement. There is peripheral oligoemia and normal cardiac silhouette size. The patient had Pulmonary Arterial Hypertension.
References: - /PT

In patients having venous pulmonary hypertension a bilateral hilar enlargement is accompanied with redistribuition, increased vascular markings and increase cardiac silhouette.

Other causes of vascular enlarged hilar are: Left-to-right shunt; Pulmonary stenosis; Pulmonary artery aneurysm and Pulmonary embolism. In patients with pulmonary embolism, the right interlobar pulmonary artery enlargement is known as the **Palla sign**.

A decrease in the artery size might be seen in conditions ofchronic decreased perfusion, such as hypoplastic lung, chronic pulmonary embolism, chronic collapse or several fibrosis. Swyer James syndrome (Fig. 17) is a pathology secondary to episodes of bronchiolitis obliterans in infancy which is characterized by an hyperlucent lung or lobe, bronchiectasis and pulmonary artery hypoplasia of the affected side.

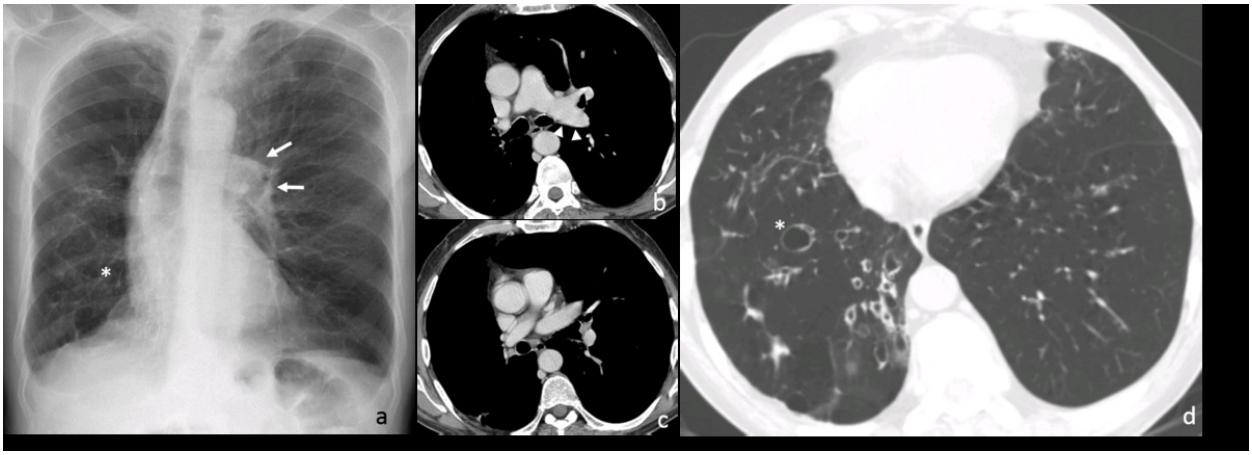
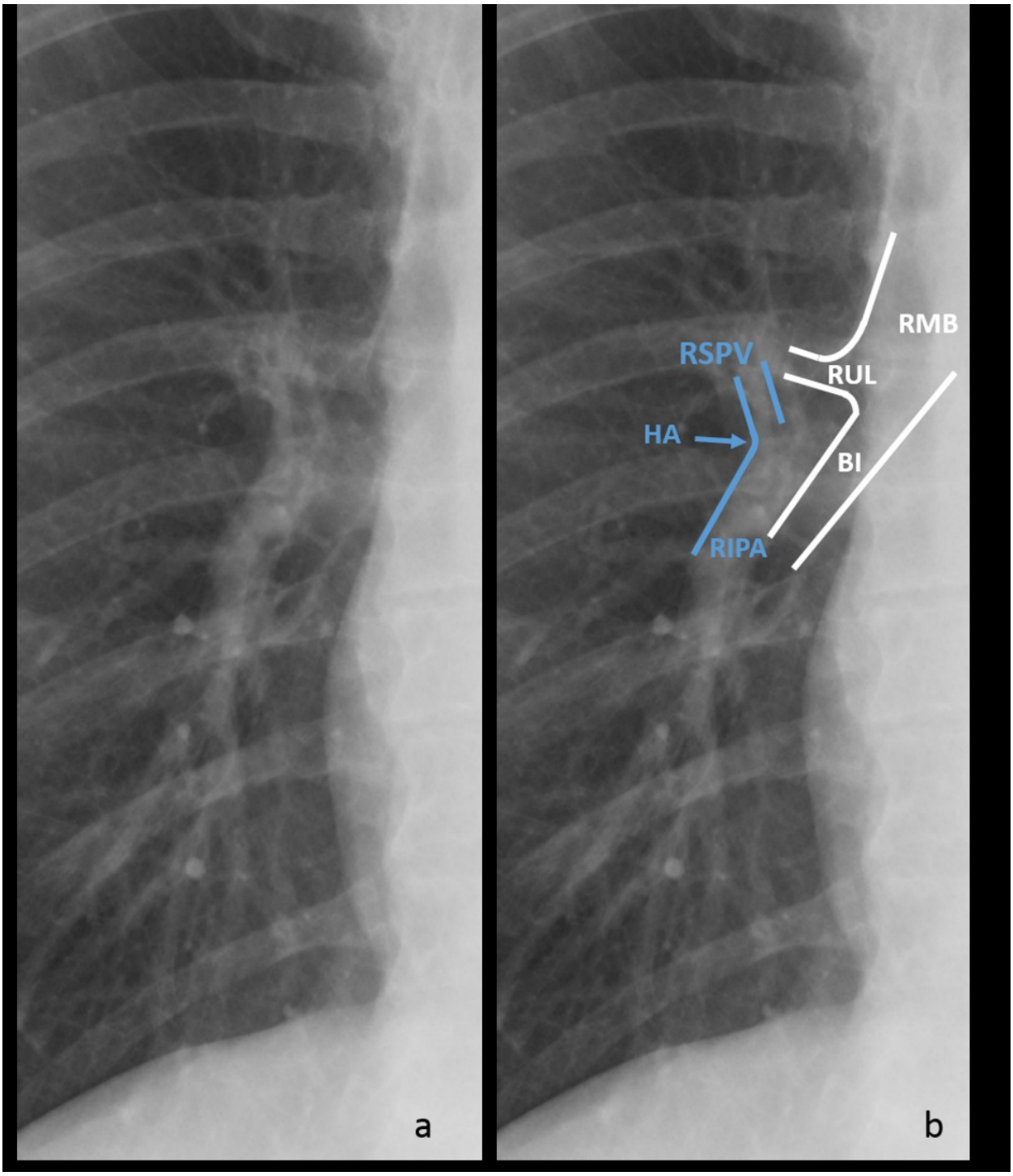


Fig. 17: The Chest radiograph (a) shows hyperinsuflated left lung with left traqueal deviation and various round lucent images on the right lung (white asterisks), more prominente in the lower zone. One can also observe a prominente left hilum (white arrows), whereas the right hilum cannot be visualized. The CT demonstrates assymetric pulmonary arteries with a left pulmonar artery size measuring 25 mm (arrowheads in b) and the right pulmonar artery measuring 16 mm (white arrowheads in c). On the lower right lung multiple cystic images (asterisks in d) are visualized, as well as bronquiectasis. This patient had Swyer-James Syndrome.
References: - /PT

Images for this section:

Fig. 1: Plain frontal radiograph demonstrating a normal hila.



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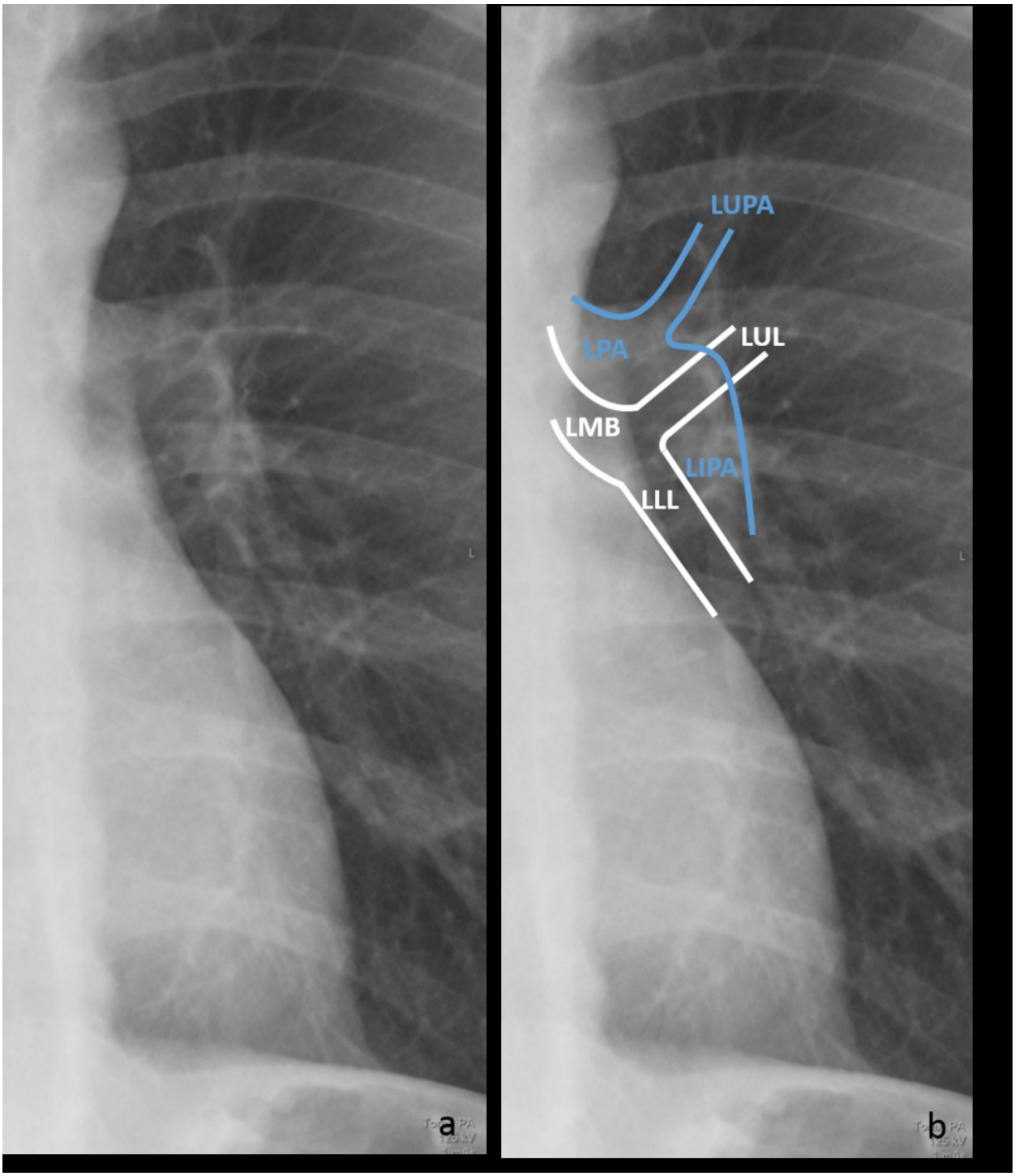
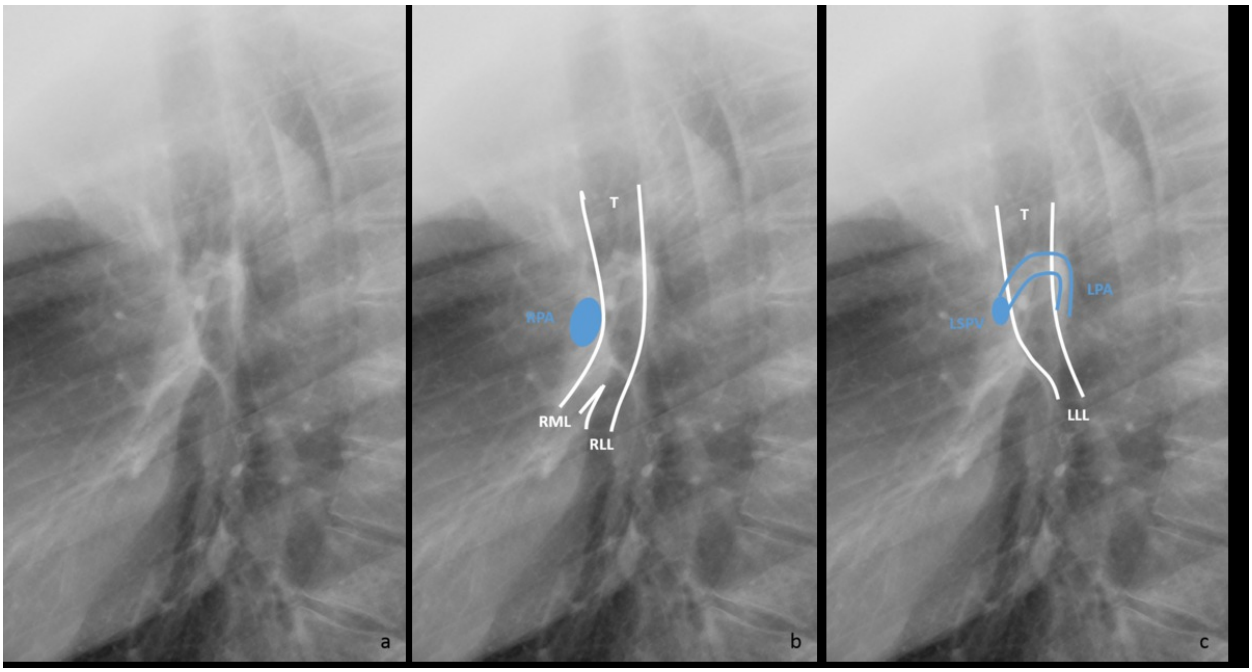


Fig. 3: Normal left hilum in a plain radiograph (left) and the corresponding anatomical representation (right). LPA: left pulmonar artery; LUPA: Left upper pulmonar artery; LIPA: Left inferior pulmonar artery; LMB: Left main bronchus; LUL: Lelft upper lobe bronchus; LLL: Left lower lobe bronchus.



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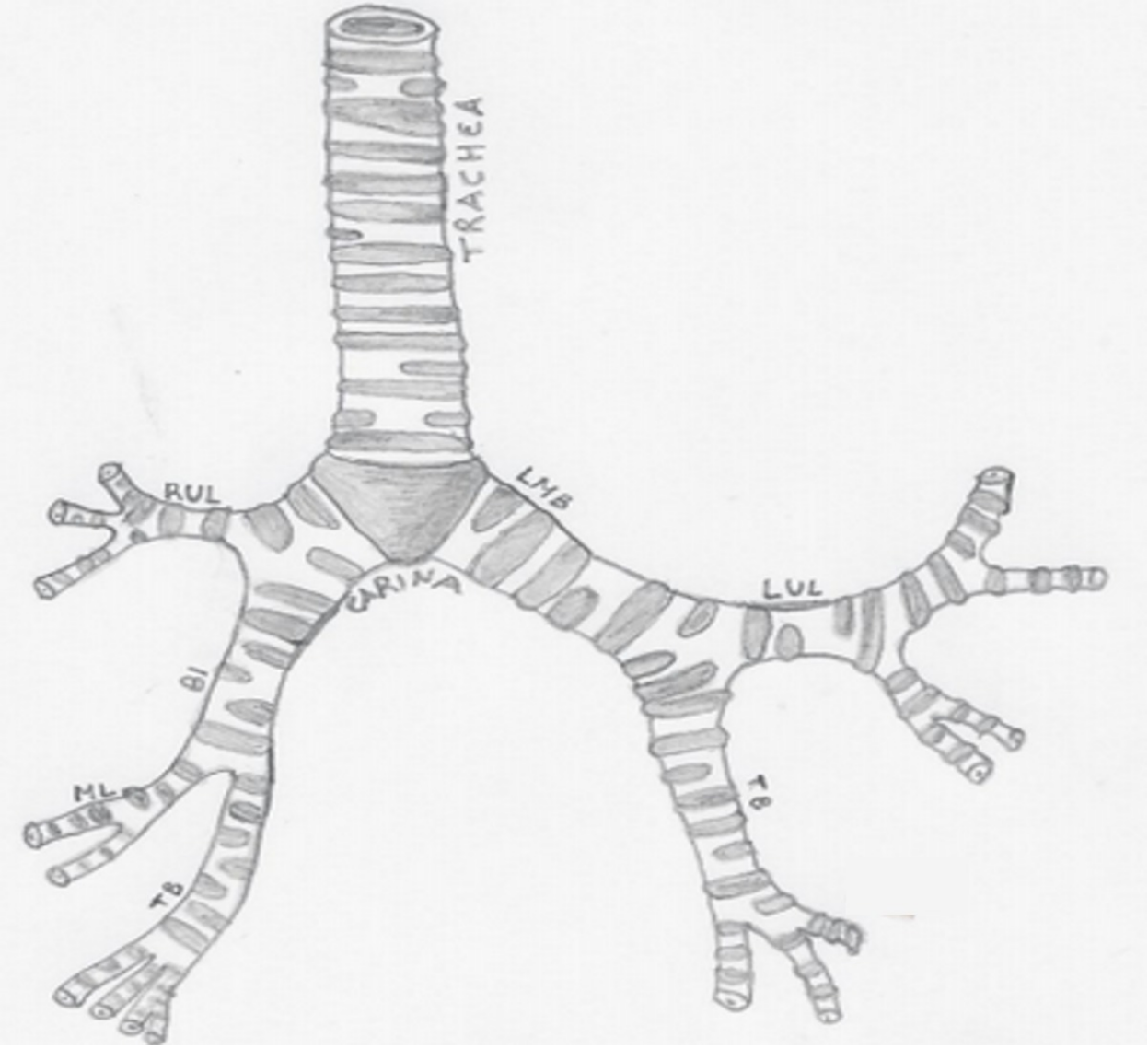

Fig. 5: Schematic representation of the bronchial anatomy. RUL: Right upper lobe bronchus; BI: Bronchus Intermedius; ML: Middle lobe bronchus; TB: Truncus basalis; LMB: Left main Bronchus; LUL: Left upper lobe bronchus

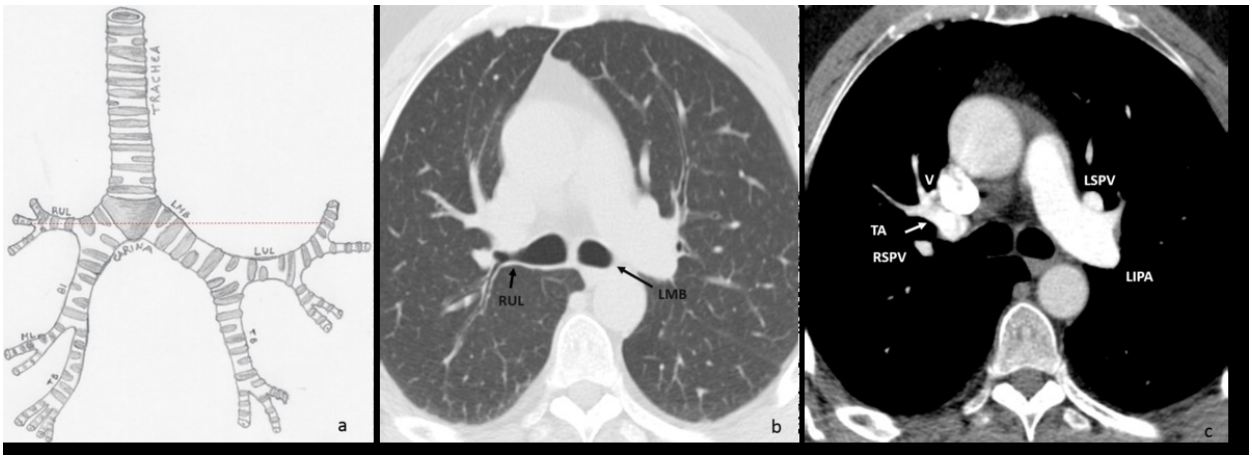

Fig. 6: Level of the Right Upper Lobe (RUL) bronchus and left main bronchus (LMB) (a and b): On the lung window (b) the RUL bronchus and its segmental bronchi can be identified originating from the right main bronchus. The left main bronchus (LMB) still remains undivided at this level. On the mediastinal window (c) the truncus anterior (TA) lies anterior to the RUL and can be seen branching on this image. The right superior pulmonar vein (RSPV) can be seen between the division of the RUL in the anterior and posterior segmental bronchi. Between the TA and the superior vena cava the apical-anterior vein (V) can be identified. On the left hilum, the left interlobar pulmonar artery (LIPA) can be seen branching, with the left superior pulmonar vein (LSPV) anterior to it.

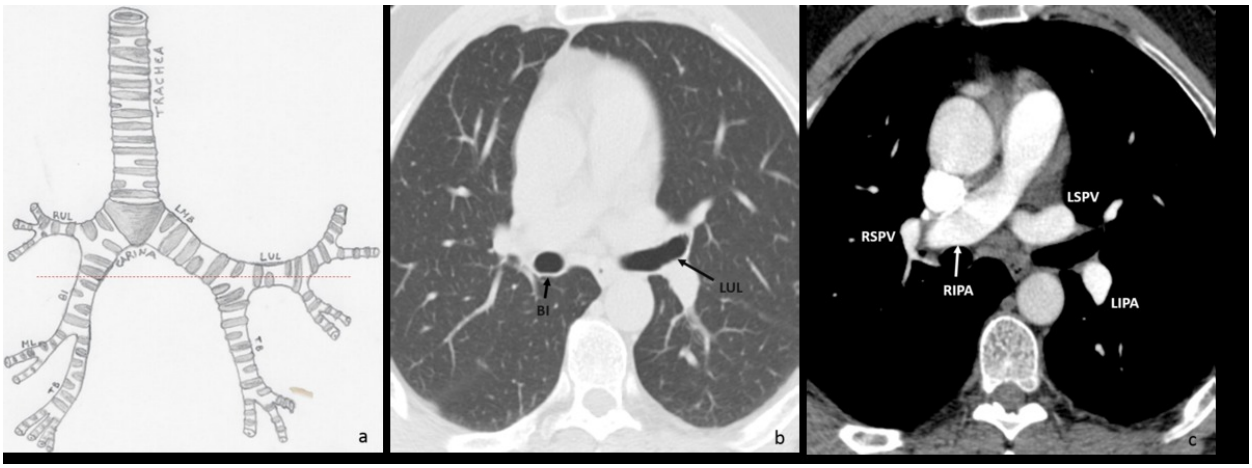

Fig. 7: Level of the Bronchus intermedius (BI) and the left upper lobe (LUL) bronchus (a and b): The right interlobar pulmonar artery (RIPA) lies anterior to the BI, while the the right superior pulmonar artery (RSPV) lies laterally to these structures. The left inferior pulmonar artery (LIPA) lies posterior to the LUL bronchus and the left superior pulmonar vein (LSPV) anterior to both.

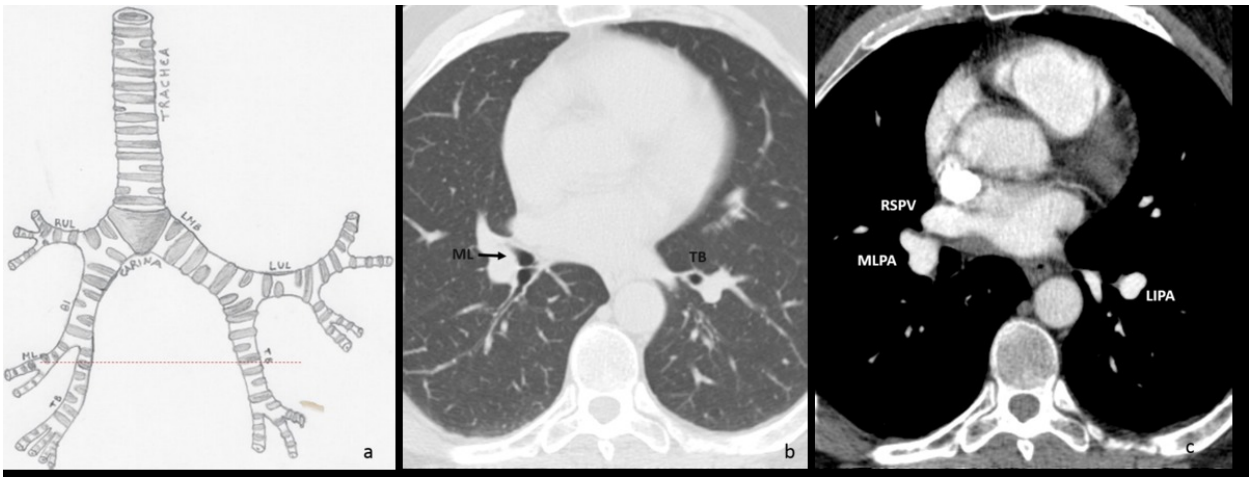

Fig. 8: Level of the middle lobe bronchus (ML) and the left Truncus Basalis (TB) (a and b): The lower lobe pulmonar artery and the right middle lobe artery (MLPA) can be seen originating from the right interlobal pulmonar artery. The right superior pulmonar vein, anterior to them, can be seen entering the left atrium. The left inferior pulmonar artery (LIPA) lies lateral to the TB.

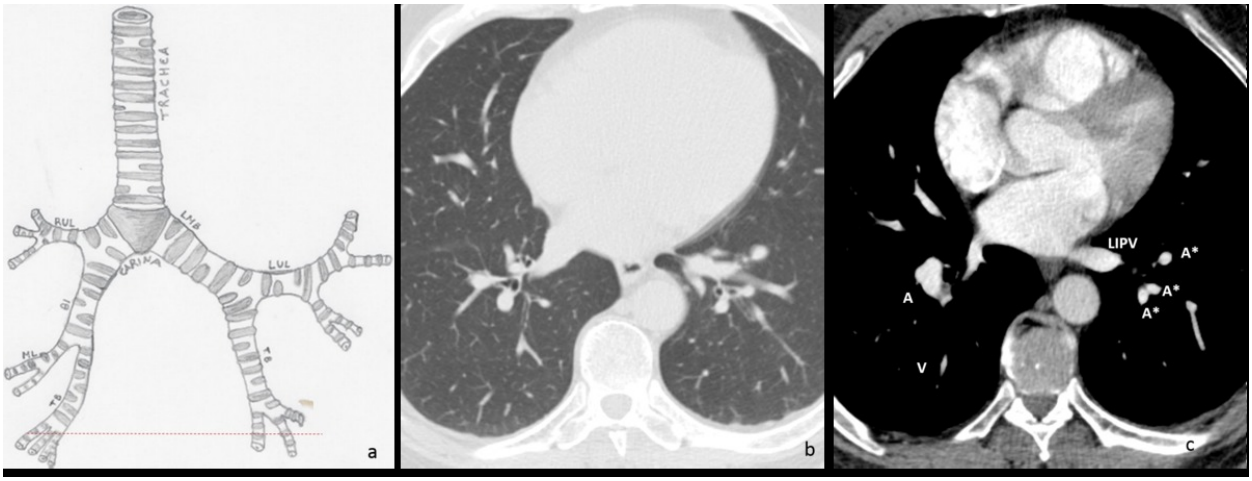

Fig. 9: Bellow the branching of the Truncus Basalis (TB) (a and b), the right lower lobe pulmonar artery is beginning to branch (A), laterally to the bronchi. The arteries at this level are imaged in cross-section, while the inferior pulmonar veins (V) appear as tubular due to their horizontal postion at this level and can be seen postero-medially to the bronchi, joining the left atrium from below. Branches of the left interlobar pulmonar artery (A*), imaged in cross-section, are seen laterally to the bronchi. The left inferior pulmonar vein (LIPV) runs medially to them, laterally to the descending aorta to enter the left atrium.

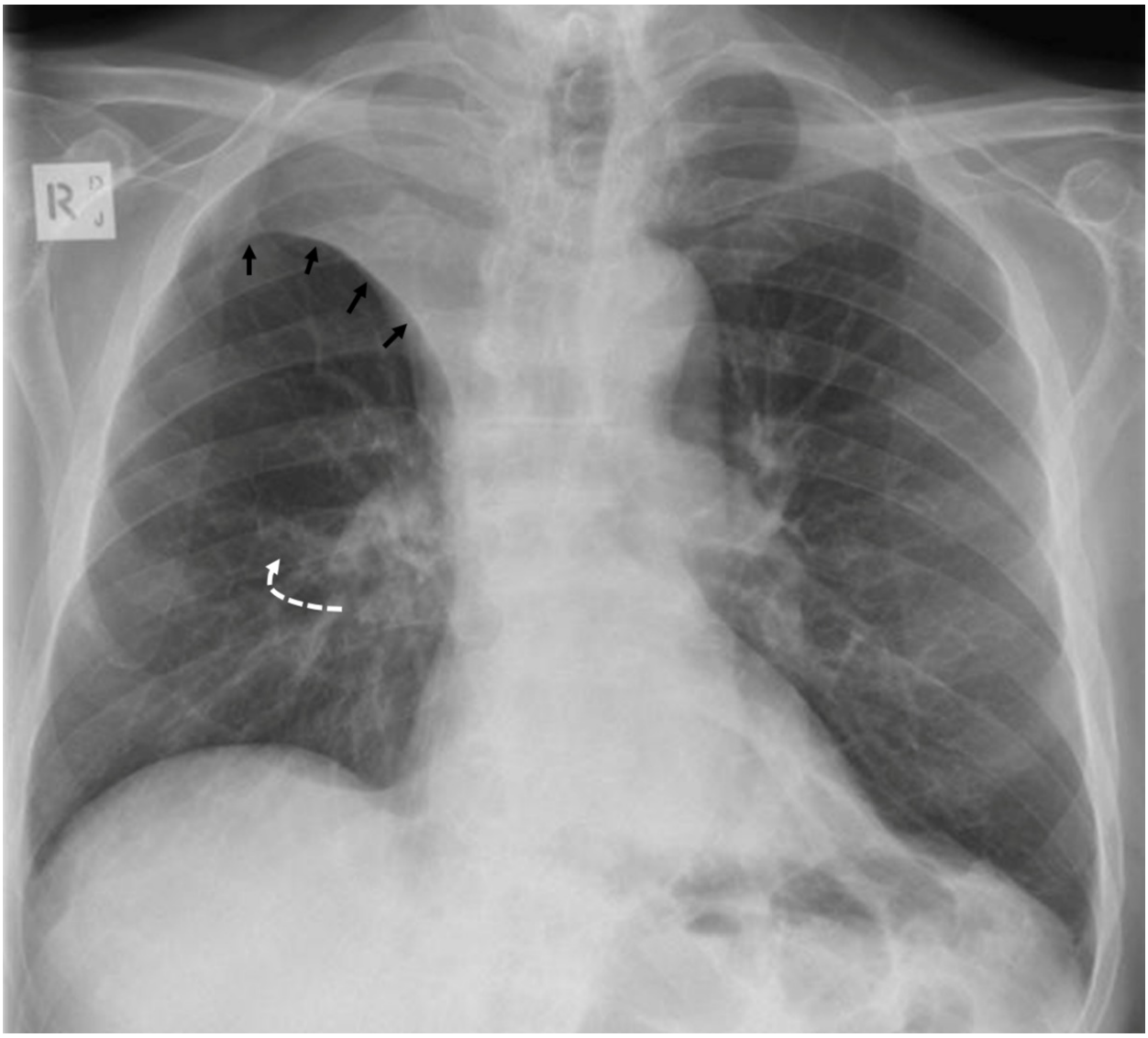

Fig. 10: Superior displacement and horizontalization of the right hilum (white curved arrow) due to atelectasis of the right superior pulmonar lobe (black arrows).

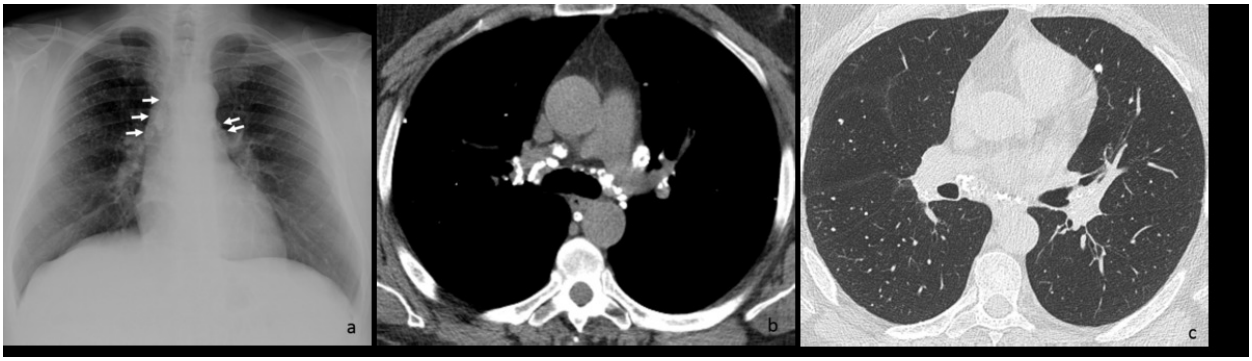

Fig. 12: The plain radiograph (a) demonstrates the presence of bilateral, regular-contour hilar nodes with peripheral calfications (white arrows). In the lung parenchima, multiple

peripheral micronodes predominating in the upper and middle zones of the thorax are seen. The CT of the same patient reveals the presence of multiple hilar lymph nodes with egg-shell calcifications (b). On the lung window (c), multiple peripheral calcified micronodes are seen.

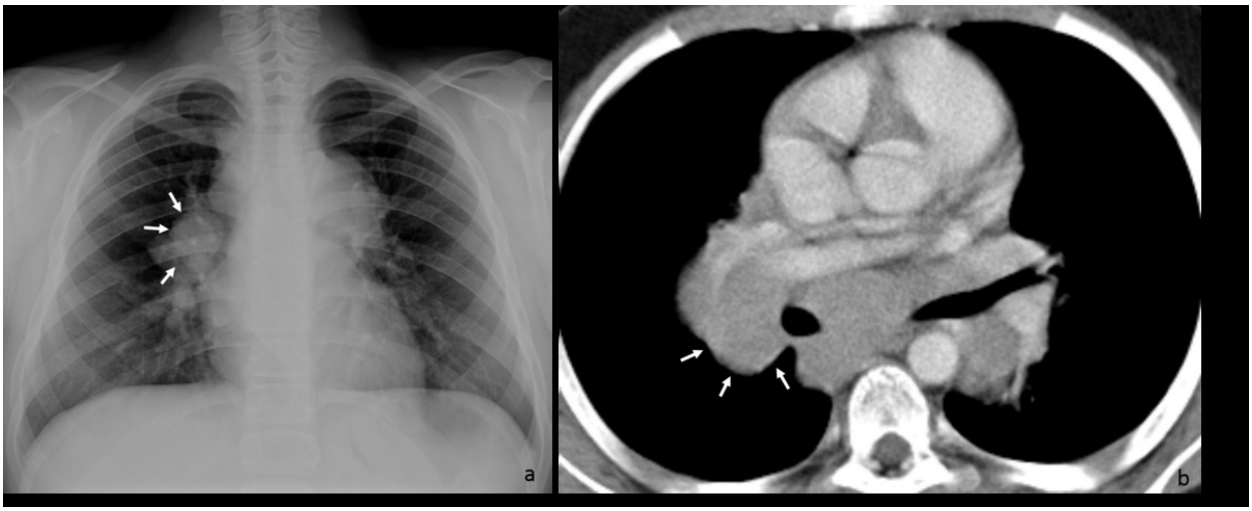

Fig. 13: The chest radiograph (a) of a young patient demonstrates enlarged and lobulated hila, with a convex hilar angle (white arrows). The CT of the same patient (b) demonstrates the presence of multiple bilateral enlarged lymph nodes. The adenopathy located lateral to the Bronchus Intermedius (white arrows) causes the convexity in the hilar angle, observed in the radiograph. The patient had Hodgkin Lymphoma.

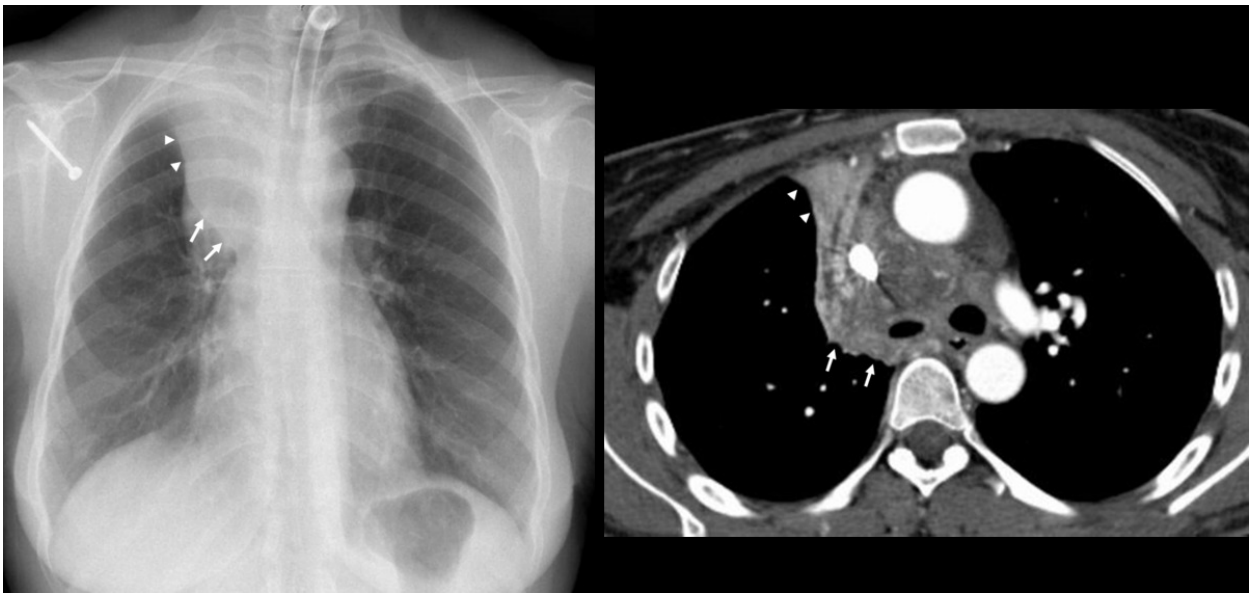

Fig. 15: The chest radiograph (a) shows an abnormal right hilar morphology due to a right hilar mass that and subsequente right upper lobe atelectasis, demonstrating the Golden S sign, in which in convex border is caused the hilar mass (white arrows) and the concave border is formed by the small cisure (arrowheads). The CT of the same patient

(b) shows the tumoral mass in the right hilum(white arrows) and the collapse of the right upper lobe (arrowheads).

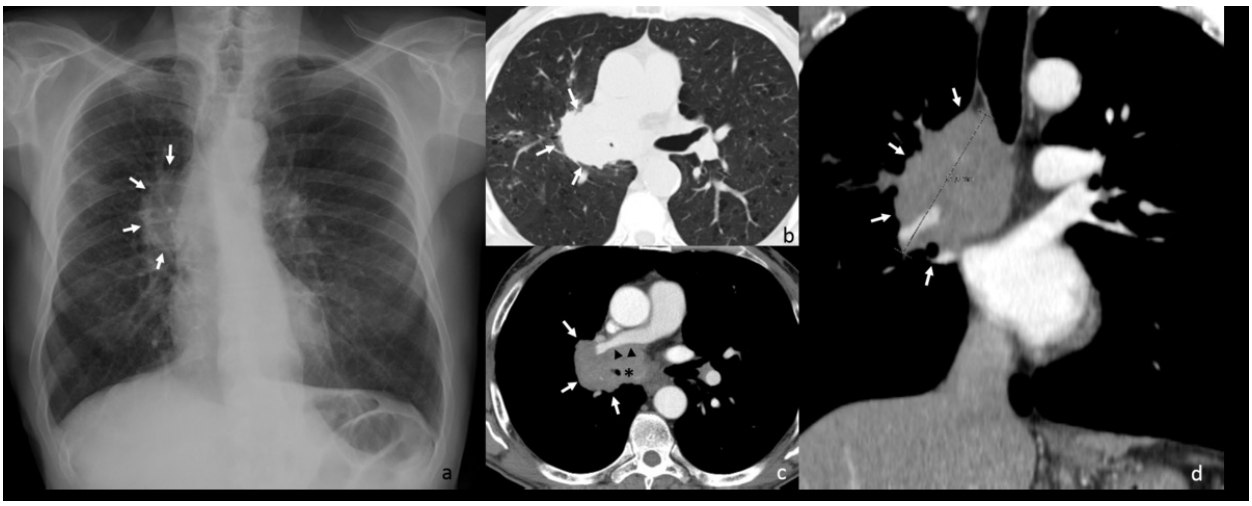

Fig. 14: Abnormality of the right hilar contour with a convex hilar angle (white arrows in a). The absence of hilar overlay sign demonstrates the hilar origin of this mass. Left traqueal deviation is also seen. The CT demonstrated the presence of a mass (white arros in b, c and) involving the right main bronchus (asterisk in c) and the right interlobar pulmonary artery (black head arrows in c). The mass proved to be a bronchogenic carcinoma.

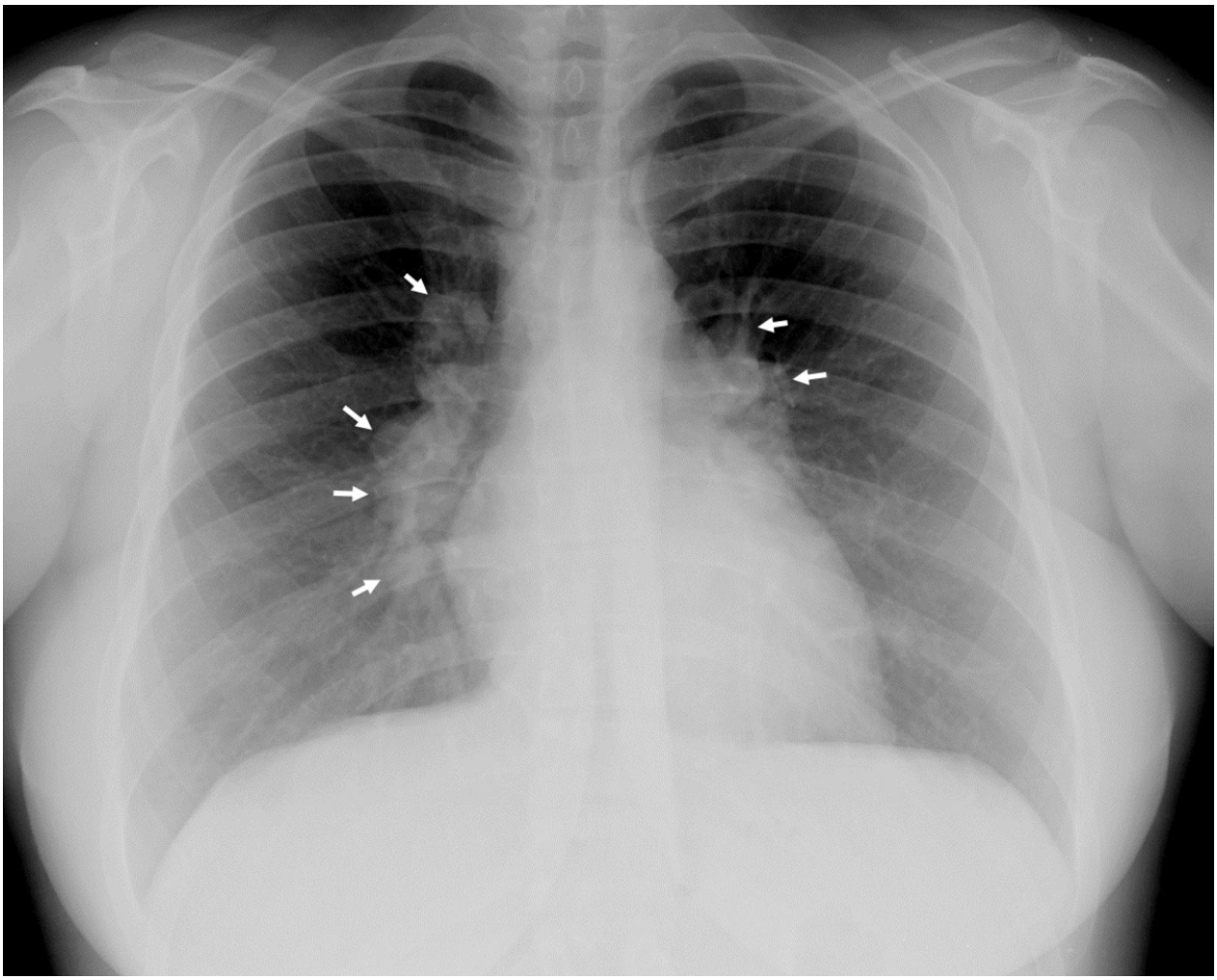

Fig. 11: The hila appear bilaterally enlarged and lobulated with smooth contours due to the presence of multiple adenopathies (white arrows). The space between the right hilum and the mediastinum is preserved. The patient had Sarcoidosis.

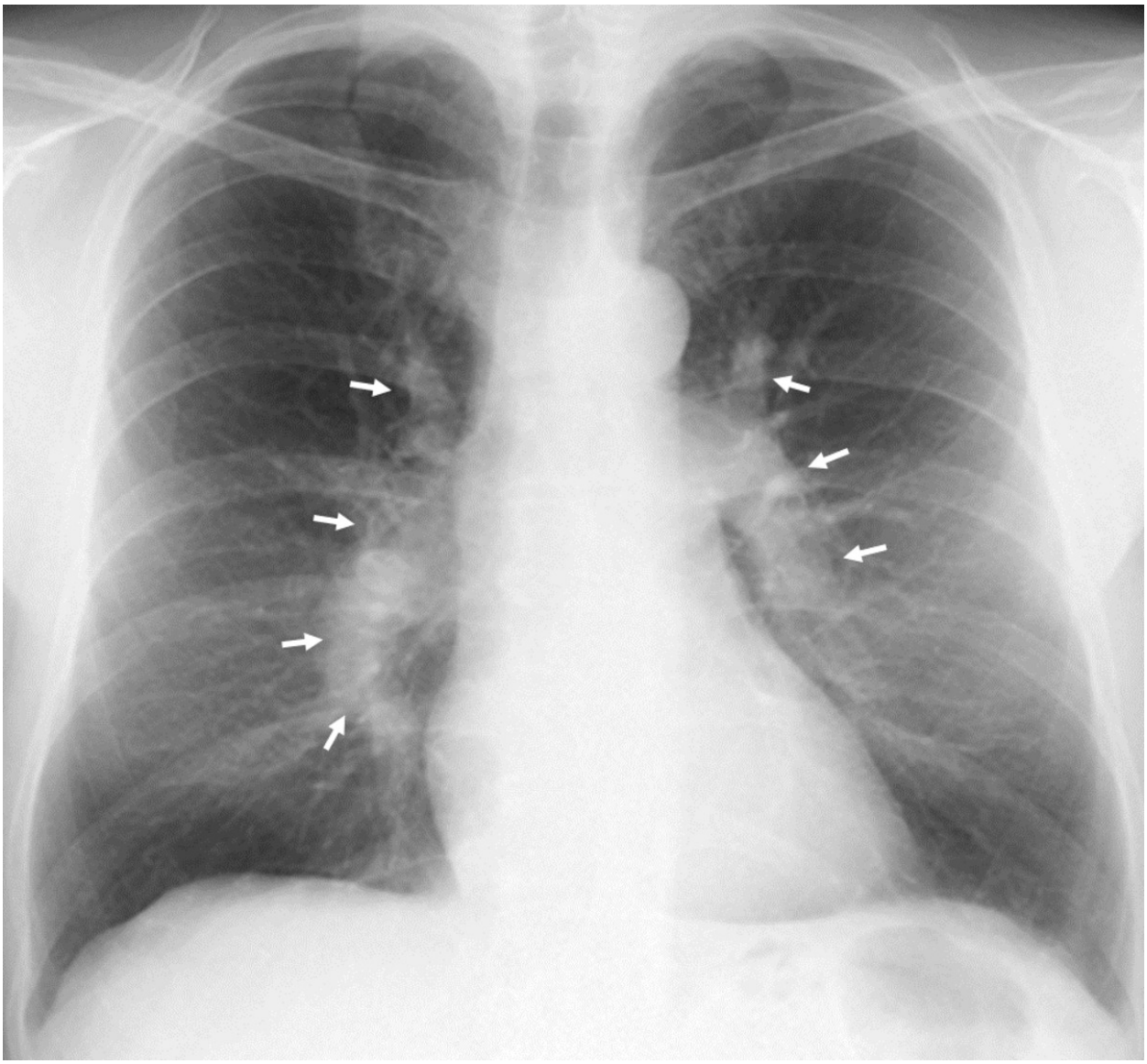

Fig. 16: The chest radiograph demonstrates a bilateral increase in the hilar size (white arrows). The hilar convergence sign confirms the vascular origin of hilar enlargement. There is peripheral oligoemia and normal cardiac silhouette size. The patient had Pulmonary Arterial Hypertension.

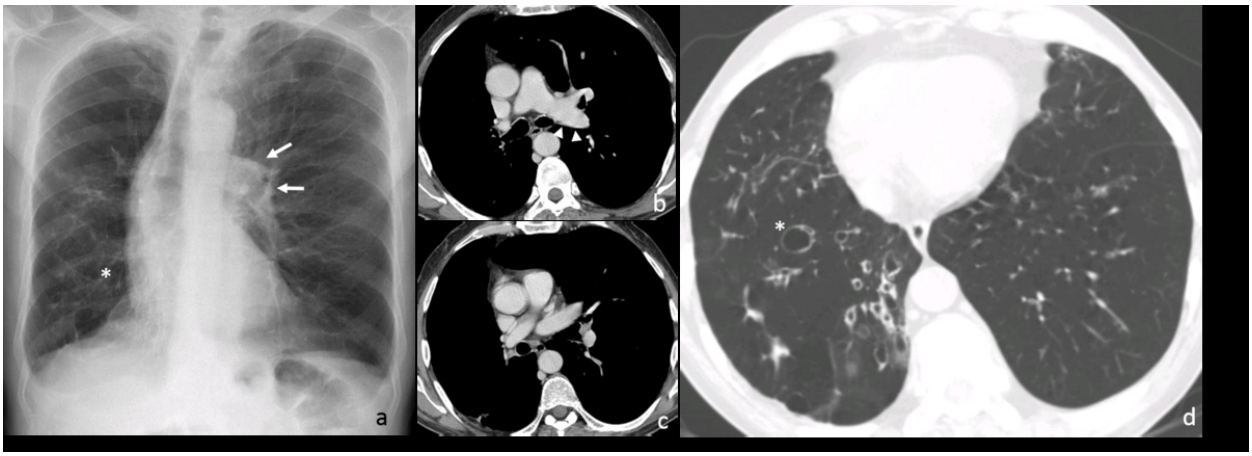

Fig. 17: The Chest radiograph (a) shows hyperinsuflated left lung with left traqueal deviation and various round lucent images on the right lung (white asterisks), more prominente in the lower zone. One can also observe a prominente left hilum (white arrows), whereas the right hilum cannot be visualized. The CT demonstrates assymetric pulmonary arteries with a left pulmonar artery size measuring 25 mm (arrowheads in b) and the right pulmonar artery measuring 16 mm (white arrowheads in c). On the lower right lung multiple cystic images (asterisks in d) are visualized, as well as bronquiectasis. This patient had Swyer-James Syndrome.

Conclusion

Conclusion

The adequate recognition of the normal radiological pulmonary hila is fundamental to allow proper identification of pathological cases and when to recommend cross-sectional imaging studies.

Personal information

References

1. W. R. Webb, C. B. Higgins, Thoracic Imaging, Lippincott Williams & Wilkins (2011) 2nd Ed.

2. B. H. Gros, H. J. Schneider, A. V. Proto, Egshel Calcifcation of

Lymph Nodes: An Uptade. AJR (1980)135:1265-1268.

3. A. Palla, V. Donnamaria, S. Petruzzelli, G. Rossi, G. Riccetti, C. Giuntini, Swyer James syndrome: CT findings in eight patients, AJR (1992) 158:121-1215