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Inside this issue: Imaging in diffuse lung diseases

CT features of diffuse lung disease in infancy	2
Isolated Cystic Lung Disease: An Algorithmic Approach to Distinguishing BirtHogg-Dubé Syndrome, Lymphangiomyomatosis, and Lymphocytic Interstitial Pneumonia	2
Lung US Surface Wave Elastography in Interstitial Lung Disease Staging	3
A Stepwise Diagnostic Approach to Cystic Lung Diseases for Radiologists	4
Sarcoidosis: A Diagnosis of Exclusion	4
Inter-observer agreement in identifying traction bronchiectasis on computed tomography: its improvement with the use of the additional criteria for chronic fibrosing interstitial pneumonia	5
Clinical and radiological features of pulmonary tuberculosis in patients with idiopathic pulmonary fibrosis	5
Probable UIP: What is the Evidence that Compels this Classification and How is it Different from the Indeterminate Category?	6
Computer-Aided Diagnosis of Pulmonary Fibrosis Using Deep Learning and CT Images	7
Progression of probable UIP and UIP on HRCT	7

Articles selected and commented on by: Dr. **Ashish Chawla**, MBBS DABR, Senior Consultant, Dept of Diagnostic Radiology, Khoo Teck Puat Hospital, Singapore



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CT features of diffuse lung disease in infancy

Toma P, et al.

La radiologia medica. 2018 Aug 1;123(8):577-85.

<https://doi.org/10.1007/s11547-018-0878-3>

Comments: Diffuse lung disease in infancy includes a wide range of very rare and peculiar pulmonary conditions usually not seen in older children, in whom diffuse lung disease has much greater overlap with adult disorders. The acronym chILD (childhood Interstitial Lung Disease) commonly defines these disorders.

Chest imaging in infants is challenging with concerns about radiation dose, patient compliance and technical challenges, in particular minimization of motion artefacts. The CT thorax remains the most important investigation for precise characterization of chILD. Since, the chILDs are rare, the interpretation of the CT in these patients is not straight forward. This is an interesting article discussing the imaging features of diffuse lung diseases in young children. Table 3 essentially summarizes the imaging features of the common chILDs. Authors conclude that in most of the cases, diagnosis of specific disease is difficult on imaging alone but a specific radiological diagnosis can be made in rare situation like in a child with Neuroendocrine cell hyperplasia of infancy (NEHI).

Isolated Cystic Lung Disease: An Algorithmic Approach to Distinguishing BirtHogg-Dubé Syndrome, Lymphangioleiomyomatosis, and Lymphocytic Interstitial Pneumonia

Escalon JG, et al.

American Journal of Roentgenology. 2019 Jun;212(6):1260-4.

<https://doi.org/10.2214/AJR.18.20920>

Comments: The imaging of cystic lung diseases is a fascinating experience for the chest radiologists. Isolated cystic lung disease with otherwise normal lung parenchyma is a frequently encountered dilemma for the radiologists. The three most common entities with cystic lung disease on CT scan are lymphangioleiomyomatosis (LAM), lymphocytic interstitial pneumonia



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(LIP) and Birt-Hogg-Dubé (BHD) syndrome with BHD being most rare. BHD syndrome is a potentially underdiagnosed or misdiagnosed entity because of its rarity and because it can be confused with other cystic lung diseases. The diagnosis is crucial as all the three diseases have other potentially important nonpulmonary manifestations that require appropriate management. Accurate diagnosis is important in particular, for patients with BHD syndrome and their family members, because such patients have a high risk for renal cell carcinoma and spontaneous pneumothoraces

The purpose of this study was to characterize the CT appearances of these three conditions and create a practical CT-based algorithm to differentiate among them. The study was a retrospective review of the CT images of 16 patients with BHD syndrome, 17 patients with LAM, and 14 patients with LIP. The authors concluded that compared with patients with LIP or LAM, patients with BHD syndrome were significantly more likely to have elliptical (floppy) paramediastinal cysts (88–94% of patients with BHD syndrome, 36–43% of patients with LIP, and 6–12% of patients with LAM) or a disproportionate number of paramediastinal cysts (69–88% of patients with BHD syndrome, 0–14% of patients with LIP, and 0–6% of patients with LAM). Lower lung–predominant cysts were significantly more likely to be found in patients with BHD syndrome (100% of patients) or LIP (71–93% of patients) than in patients with LAM (6–12% of patients), who were more likely to have diffuse cysts. They suggested that the radiologists can use the proposed CT-based algorithm to prospectively and confidently suggest one of these disorders as the favored diagnosis.

The radiological differentiation among these three cystic lung diseases is important as nowadays the diagnosis is solely based on CT features, clinical findings and Lab markers (For example elevated serum VEGF-D in LAM) while the surgical lung biopsy, although gold standard is rarely performed.

Lung US Surface Wave Elastography in Interstitial Lung Disease Staging

Zhou B, et al.

Radiology. 2019 Mar 5;291(2):479-84.

<https://doi.org/10.1148/radiol.2019181729>

Comments: Lung US surface wave elastography (SWE) can noninvasively quantify lung surface stiffness or fibrosis by evaluating the rate of surface wave propagation. The aim of the study was to assess the utility of lung US SWE for evaluation of interstitial lung disease. In this prospective study, lung US SWE was used to assess 91 participants with interstitial lung disease and 30 healthy subjects. Severity of interstitial lung disease was graded based on pulmonary function tests, high-resolution CT, and clinical assessments. The researchers propagated surface waves on the lung through gentle mechanical excitation of the external chest wall and measured the lung surface wave speed with a US probe.

The authors concluded that the lung US SWE had good sensitivity and specificity for differentiating between healthy subjects and participants with interstitial lung disease; it also had good sensitivity and specificity for differentiating between healthy subjects and participants with mild interstitial lung disease. Lung US SWE had moderate sensitivity and specificity for differentiat-

ing between severe interstitial lung disease and mild, moderate, or no interstitial lung disease. Lung US SWE may be a useful screening tool for assessing interstitial lung disease in at-risk patients and potentially can be used for follow-up monitoring.

A Stepwise Diagnostic Approach to Cystic Lung Diseases for Radiologists

Lee KC, et al.

Korean journal of radiology. 2019 Sep 1;20(9):1368-80.

<https://dx.doi.org/10.3348%2Fkjr.2019.0057>

Comments: Lung cysts are commonly seen on computed tomography (CT), and cystic lung diseases show a wide disease spectrum. Thus, correct diagnosis of cystic lung diseases is a challenge for radiologists. As the first diagnostic step, cysts should be distinguished from cavities, bullae, pneumatocele, emphysema, honeycombing, and cystic bronchiectasis. Second, cysts can be categorized as single/localized versus multiple/diffuse. Solitary/localized cysts include incidental cysts and congenital cystic diseases. Multiple/diffuse cysts can be further categorized according to the presence or absence of associated radiologic findings. Multiple/diffuse cysts without associated findings include lymphangiomyomatosis and Birt-Hogg-Dubé syndrome. Multiple/diffuse cysts may be associated with ground-glass opacity or small nodules. Multiple/diffuse cysts with nodules include Langerhans cell histiocytosis, cystic metastasis, and amyloidosis. Multiple/diffuse cysts with ground-glass opacity include pneumocystis pneumonia, desquamative interstitial pneumonia, and lymphocytic interstitial pneumonia. This stepwise radiologic diagnostic approach can be helpful in reaching a correct diagnosis for various cystic lung diseases.

This review articles with high quality images is extremely useful for radiologists in reaching a accurate diagnosis of cystic lung disease noninvasively. CT remains the single most useful non-invasive diagnostic tool for evaluating cystic lung diseases.

Sarcoidosis: A Diagnosis of Exclusion

Lee GM, et al.

American Journal of Roentgenology. 2019 Oct 31:1-9.

<https://doi.org/10.2214/AJR.19.21436>

Comments: As far as radiology is concerned, the sarcoidosis is a chameleon and mimics many other diseases. This article describes the typical and atypical imaging features of sarcoidosis, identify entities that may be mistaken for sarcoidosis, and discuss patterns and clinical scenarios that suggest an alternative diagnosis. The authors suggest that radiologists must be familiar with the characteristic findings in sarcoidosis and be attentive to situations that suggest alternative diagnoses.

The article is pleasant o read and addresses the everyday problems faced by radiologists in making a diagnosis of Sarcoidosis. The images are crisp and legends are descriptive.

Inter-observer agreement in identifying traction bronchiectasis on computed tomography: its improvement with the use of the additional criteria for chronic fibrosing interstitial pneumonia

Tominaga J, et al.

Japanese journal of radiology. 2019 Sep 14:1-8.

<https://doi.org/10.1007/s1160>

Comments: It has been previously reported that the extent of honeycombing and traction bronchiectasis is correlates with fibrosis stage in interstitial lung diseases and has prognostic role in chronic fibrosing interstitial pneumonia. The Fleischer Society definition of traction bronchiectasis was used for the evaluations. For the purpose of the study, additional criteria for traction bronchiectasis, were also included. The purpose of the present study was to quantify inter-observers' variability in identifying traction bronchiectasis on CT with the use of the additional criteria which specified chronic fibrosing interstitial pneumonia as underlying disease. Forty-eight observers assessed the same image set, first according to the Fleischer Society definition, and second with additional criteria, in which traction bronchiectasis was observed exclusively in chronic fibrosing interstitial pneumonia. The authors concluded that Inter-observer agreement in identifying traction bronchiectasis improves when using the additional criteria which specify chronic fibrosing interstitial pneumonia as the underlying disease.

This study brings traction bronchiectasis to our attention, that is often overlooked hallmark of fibrotic lung disease. It's the time that definition of traction bronchiectasis on CT should be made more precise with the additional criteria.

Clinical and radiological features of pulmonary tuberculosis in patients with idiopathic pulmonary fibrosis

Lee YH, et al.

Respiratory Investigation. 2019 Sep 25.

<https://doi.org/10.1186/s12890-019-0969-5>

Comments: PTB has been reported to develop more frequently in patients with IPF than in the general population. It has been reported that the imaging features of PTB in patients with IPF are atypical and can be overlooked that may have grave consequences for the patients. The aim of this study was to investigate the clinico-radiological features of pulmonary tuberculosis (PTB) in patients with idiopathic pulmonary fibrosis (IPF). Clinico-radiological variables were retrospectively compared between PTB patients with and without IPF (TB-IPF and TB-control, respectively), and computed tomography (CT) findings were compared between the TB-IPF group and patients with nontuberculous mycobacterial lung disease and IPF (NTM-IPF). In the results, the authors reported that CT findings in the TB-IPF group were characterized by lower rates of centrilobular nodules and a higher prevalence of consolidation-predominant pattern than the TB-control group. CT findings of NTMLD in idiopathic interstitial pneumonia are also known to be

atypical, demonstrating that consolidation was the most common CT finding. The authors also concluded that because PTB and NTMLD in IPF patients share similar CT findings, active microbiological study is required for differential diagnosis. From clinical perspective, when compared with the TB control group, dyspnea was more common in the TB-IPF group.

This is an important topic for radiologists and clinicians practicing in a TB endemic zone. IPF is prevalent worldwide and associated with its own usually downward clinical course that can be further complicated by TB.

Probable UIP: What is the Evidence that Compels this Classification and How is it Different from the Indeterminate Category?

Chung JH, et al.

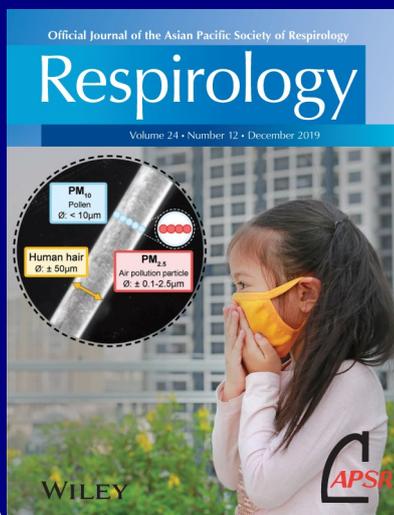
Seminars in roentgenology 2019 Jan (Vol. 54, No. 1, pp. 15-20)

<https://dx.doi.org/10.1053/j.ro.2018.12.006>

Recently, the Fleischer Society published a white paper updating the approach to IPF diagnosis based on advances in the field. In this white paper, 2 major alterations to the usual interstitial pneumonia (UIP) classification system on CT are the introductions of the probable UIP and indeterminate for UIP categories. The ATS, European Respiratory Society, Japanese Respiratory Society, and Latin ATS subsequently in their updated guidelines published similar, or rather identical, categories with minor inconsequential differences. The purposes of this review paper are first to review these changes, to provide a background on the imaging of IPF to date, and, finally, to address some nuances and shortcomings of the current state of imaging in IPF.

This is quite interesting article that gives more insight into the changes in categorization of UIP with respect to likelihood of IPF.

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Computer-Aided Diagnosis of Pulmonary Fibrosis Using Deep Learning and CT Images

Christe A, et al.

Investigative radiology. 2019 Oct;54(10):627

<https://dx.doi.org/10.1097%2FRLI.0000000000000574>

Comments: The aim of this study is to assess the performance of a computer-aided diagnosis (CAD) system (INTACT system) for the automatic classification of high-resolution computed tomography images into 4 radiological diagnostic categories and to compare this with the performance of radiologists on the same task. Authors found that a computer-aided detection algorithm based on machine learning was able to classify idiopathic pulmonary fibrosis with similar accuracy to a human reader.

This article is one of those work towards the future. The diagnosis of ILDs is a challenging task for the radiologists. However, we are observing a lot of groups working on application of artificial intelligence in making precise diagnosis of fibrotic lung diseases. This article provides a lot of insight into the strength and future direction of artificial intelligence in imaging of fibrotic lung diseases.

Progression of probable UIP and UIP on HRCT

Salvatorea M, et al.

Clinical imaging. 2019 Nov 1;58:140-4.

<https://doi.org/10.1016/j.clinimag.2019.07.003>

Comments: According to new guidelines on imaging, the only difference between UIP and probable UIP is the absence of identifiable honeycombing in probable UIP category. The aim of the study is to evaluate the change in IPF related fibrosis over time with particular focus in the transition from “Probable UIP” to “UIP” pattern to better identify early findings. In this study, progression to UIP was observed in 47% of the patients with probable UIP on the initial CT scan in median time of 51 months. The risk of honeycombing progression, adjusted for gender, of patients with emphysema was 2.53 times higher than patients without emphysema. Increased pulmonary artery size was significantly associated with an elevated risk for more advanced honeycombing progression.

There is an interesting suggestion of the author that probable UIP may be early UIP. This paper also bring the importance of mentioning diameter of pulmonary artery on CT.

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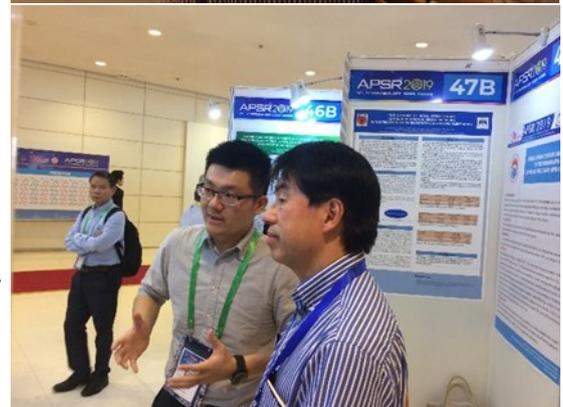
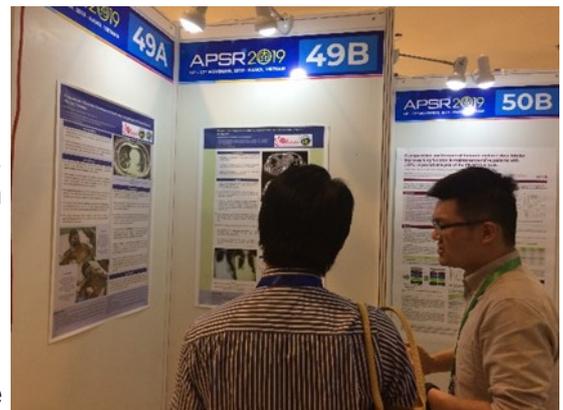
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Winner of the Respirology Case Report Poster Award 2019

The award formed part of the 'Meet the Editor-in-Chief' event, which was organized for the first time at the APSR Congress 2019 in Hanoi, Vietnam. Editor in Chief Dr Chris Lai and Deputy Editor Paul Reynolds were able to talk to many presenters of case report posters about their cases and the consideration of publishing their case report in a peer review journal.

The award provides an opportunity for Dr Nai-Chien Huan to submit his case report manuscript to *Respirology Case Reports*, receive assistance by the Editorial Office to improve the manuscript where needed to enhance its eligibility for peer review. If accepted for publication, the article processing charges for publication in Open Access will be waived for Dr Huan.

The team at *Respirology Case Reports* wishes Dr Huan the best of luck with this guided experience to write and publish, and thanks all other poster presenters of case reports for their participation in the event.



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