Listening to IPF Lungs

Can you hear the difference?

Lung auscultation is currently the best way to recognise idiopathic pulmonary fibrosis (IPF) early and is relatively easy to conduct in a clinical setting.[1] One of the key clinical features of IPF is the presence of crackles that can be heard during lung auscultation.[1,2]

The fine crackles—discontinuous, short, explosive sounds—heard in the basal section of the lungs of those with IPF are similar to the sound of Velcro® being separated.[1,3-5]

Clinical investigation of 132 patients with suspected interstitial lung disease (ILD) found that these crackles were independently associated with the presence of respiratory symptoms and usual interstitial pneumonia (UIP)/possible UIP pattern in high-resolution computed tomography (HRCT) scan in a multivariate regression analysis adjusting for potential confounders.[6]

Expanded definition of Velcro® crackles [6]

Velcro® crackles

Bilateral crepitations detected during slow, deep breaths in the basal section of the lungs	Similar to the sound heard when gently separating the strip of Velcro® attached to a blood pressure cuff
Pre-dominant during inspiration and best heard over dependent lung regions	Sometimes associated with expiratory crackles

When auscultating to investigate the possibility of IPF it is important to[1]:

- Pay attention to the posterior, basal area of the lungs
- Listen throughout the entire inspiratory time
- Crackles are best detected during slow, deep breaths.

The crackles alone are not conclusive of IPF,[1] but their identification should prompt a pulmonary function test. As IPF is often misdiagnosed as other conditions (e.g. chronic obstructive pulmonary disease [COPD] or congestive heart failure),[7] if the sound of Velcro® is detected when listening to a patient's lungs, and pulmonary function tests have been conducted, the patient should be promptly referred to a pulmonologist, who may request a thin-slice HRCT scan without contrast agent.

In a study of 132 patients, 63% of those with suspected ILD had Velcro® crackles. Patients with crackles also had:[6]

- Previous respiratory symptoms and cough and dyspnoea at diagnosis Poor
- pulmonary function
- More frequent signs of honeycombing and reticular abnormalities on HRCT
- UIP on HRCT/biopsy
- Higher ILD-GAP index

Please follow the links below to listen to a variety of lung sounds and familiarise yourself with this clinical feature of IPF compared with the sounds from people with COPD, bronchial asthma and healthy lungs.

The sound of IPF lungs (1)

The sound of IPF lungs (2)

The sound of COPD lungs

The sound of bronchial asthma lungs

The sound of healthy lungs

References

1. Cottin V, et al. *Eur Respir J*. 2012;40:519–521. **2.** Baughman RP, et al. *Chest*. 1991;100:96–101. **3.** Kiyokawa H, et al. *Chest*. 2001;119:1886–1892. **4.** Forgacs P. *Lancet*. 1967;22:203–205. **5.** Vyshedskiy A, et al. *Chest*. 2009;135:156–164. **6.** Sellarés J, et al. *Medicine*. 2016;95:e2573. **7.** Belkin A, et al. *Expert Rev Respir Med*. 2014;8:173–178.