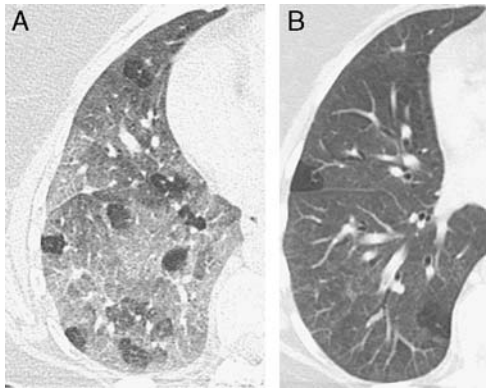
Headcheese Sign

Bradford J. Chong, BS, Jeffrey P. Kanne, MD, and Jonathan H. Chung, MD



Headcheese Sign

Juxtaposition of lobular regions of low, normal, and high attenuation on CT

Differential diagnosis

Hypersensitivity Pneumonitis

Sarcoidosis
Respiratory bronchiolitis
Mycoplasma pneumonia
Desquamative interstitial pneumonitis

FIGURE 1. Axial image from expiratory chest CT (A) shows juxtaposition of 3 different densities with well-defined margination, consistent with the headcheese sign. The inspiratory chest CT image (B) shows mild mosaic attenuation and diffuse hazy ground-glass opacity.

Appearance: The headcheese sign on chest CT is characterized by the juxtaposition of lobular regions of low, normal, and high attenuation.[1] This results in 3 (or more) different densities on CT that are sharply demarcated from each other. The abrupt density transitions reflect the margins of secondary pulmonary lobules. Low attenuation lobules almost always reflect air trapping, which can be confirmed on end-expiratory CT.[2] The CT imaging pattern is reminiscent of the variegated appearance of headcheese cold cut meat.

Explanation: The headcheese sign is indicative of a mixed infiltrative and obstructive process, usually associated with bronchiolitis.[3] The ground-glass opacity (GGO) component represents the infiltrative portion of the underlying disease.[3] Low attenuation lobules reflect obstructive small-airway disease with resultant air trapping and vasoconstriction from localized hypoxia.[2] Air trapping varyingly limits air escape in certain parenchymal regions during exhalation, and so variable lung attenuation is especially enhanced with expiratory CT.[4] This airway pathology contributes to the inhomogeneous attenuation pattern of mosaic attenuation.[4]

Discussion: The headcheese sign was initially considered highly specific if not pathognomonic for subacute hypersensitivity pneumonitis (HP). However, as with most findings initially considered to be pathognomonic for a particular condition, other diseases have been shown to present with this imaging pattern. For example, sarcoidosis, atypical infections associated with bronchiolitis (such as *Mycoplasma* pneumonia), and respiratory bronchiolitis (RB)/desquamative interstitial pneumonitis (DIP) may also manifest with the headcheese sign.[4,5] Furthermore, separate infiltrative and obstructive processes occurring together may also lead to the headcheese sign (e.g. diffuse pulmonary hemorrhage and asthma). Integrating clinical and laboratory findings may indicate the most likely diagnosis in the setting of the headcheese sign.

Chung et al showed that well-defined bronchovascular nodules and nodules along the pleural surface helped distinguish sarcoidosis from HP.[5] Unlike HP, *Pneumocystis* pneumonia tends to present with interlobular septal thickening, upper lobe cysts, and associated "crazy paving pattern," which may be superimposed on the headcheese sign.[6] Although reports have cited mild emphysema in the upper lobes and small foci of GGOs as distinct features of RB, it can still be difficult to distinguish RB from HP.[1,6]

REFERENCES

1. Devakonda A, Raoof S, Sung A, et al. Bronchiolar Disorders: A Clinical-Radiological Diagnostic Algorithm. *Chest*. 2010;137:938–951.
2. Hirschmann JV, Pipavath SN, Godwin JD. Hypersensitivity Pneumonitis: A Historical, Clinical, and Radiologic Review. *Radiographics*. 2009;29:1921–1938.
3. Webb WR. Thin-section CT of the secondary pulmonary lobule: anatomy and the image–the 2004 Fleischner lecture. *Radiology*. 2006;239:322–338.
4. Gotway MB, Reddy GP, Webb WR, et al. High-Resolution CT of the Lung: Patterns of Disease and Differential Diagnoses. *Radiol Clin North Am*. 2005;43:513–542.
5. Chung MH, Edinburgh KJ, Webb EM, et al. Mixed Infiltrative and Obstructive Disease on High-Resolution CT: Differential Diagnosis and Functional Correlates in a Consecutive Series. *J Thorac Imaging*. 2001;16:69–75.
6. Oikonomou A, Prassopoulos P. Mimics in chest disease: interstitial opacities. *Insights Imaging*. 2013;4:9–27.

The authors declare no conflicts of interest.