Suspicious imaging diagnosis

Case 380

4. Fibrous hypersensitive pneumonitis

【Progress】

She had no respiratory symptoms except transient slight cough for the past two months. Six months later, she was scheduled to take follow-up CT examination.

【Discussion】

Hypersensitivity pneumonitis arises from inhalation of antigen from air space. There are more than 200 antigens which cause hypersensitivity pneumonitis; microorganism, fungus, yeast, bacteria; protein, animal feather, yeast, flower powder, saw dust: non-microorganism, metal, chemicals, medicines (1).

Antibody for antigen or antigen-antibody complex deposits small air way: alveolar, alveolar tract, bronchioles. It induces alveolitis or bronchiolitis: increase of IgG, surfactant occupies alveolar and/or bronchioles space, fibrocytes infiltration for reparation. Fibrosis created by fibrocytes can be absorbable (2). However, if persistent and massive antigen were exposed, fibrosis created by Myo fibrocytes become thicker, inducing unabsorbable and leading persistent fibrosis (2, 3).

Previously, hypersensitivity pneumonitis is categorized into acute, subacute and chronic. Because the limits among them are ambiguous, it is categorized into non fibrotic and fibrotic hypersensitivity pneumonitis at present (4, 5).

Non-fibrous hypersensitivity pneumonitis is shown as three density patterns on chest CT. Three density patterns compose of ground glass opacity, normal pulmonary parenchyma, hyperlucent area (4). Ground glass density is composed of surfactants, IgA, IgG and small accumulation of macrophages and lymphocyte. Hyperlucent area emerges via check-valve mechanism by bronchioles inflammation

Fibrous hypersensitivity pneumonitis is a chronic type of non-fibrous hypersensitivity pneumonitis. Namely, fibrotic pattern adds to three density patterns. Persistent inflammation induces infiltration not only from fibrocytes but also from myo-fibrocytes, inducing to bring about permanent fibrosis. Fibrosis expands along with bronchioles, predominantly to peripheral area and more upper area (6). An antigen is thought to be carried to lymphatic vessels which are abundant to hilum area and apical area. Then, fibrous hypersensitivity pneumonitis is found bilateral upper peripheral area and perihilar area. The degree of fibrous thickness depends on kinds of antigen toxicity and persistency of exposed terms. As a result, radiographic CT findings of fibrous hypersensitivity are coarse fibrous tissues along with bronchioles and bronchi, occupied alveolar space with fibrous tissue predominantly found at upper lobes as well as three density patterns, above all hyperlucent area (5, 6). As differential diagnosis, PPFE (pleuro-parencymal fibroelastosis) is listed.

【Summary】

We presented fifty-nine-year-old female for check-up of chest radiograph with fibrous shadow at bilateral upper lobes. Chest CT depicted three density patterns of ground glass opacity, normal parenchyma and radiolucent area associated thick fibrous shadow, suspicious of fibrotic hypersensitive pneumonitis. It is borne in mind that hypersensitive pneumonitis is categorized into non-fibrotic and fibrotic. Non fibrotic hypersensitive pneumonitis is characteristic of three density patterns. Fibrotic hypersensitive pneumonitis is characteristic of three density patterns associated fibrosis at bilateral upper lobes, peripheral zones and hilar lesions where lymphatic vessels are dense.

【References】

1. Raghu G, et al. Diagnosis of Hypersensitivity Pneumonitis in Adults: An Official ATS/JRS/ALAT Clinical Practice Guideline. Am J Respir Crit Care Med. 2020;202(3):e36-69.
2. Sahin H, et al. Chronic Hypersensitivity Pneumonitis: CT Features Comparison with Pathologic Evidence of Fibrosis and Survival. Radiology. 2007;244(2):591-8.
3. Selman M, Pardo A, King T. Hypersensitivity Pneumonitis: Insights in Diagnosis and Pathobiology. Am J Respir Crit Care Med. 2012;186(4):314-24
4. Patel RA, et-al. Hypersensitivity pneumonitis: patterns on high-resolution CT. J Comput Assist Tomogr. 2000;24 (6): 965-70.
5. Adler B, et al. Chronic Hypersensitivity Pneumonitis: High-Resolution CT and Radiographic Features in 16 Patients. Radiology. 1992;185(1):91-5.
6. Torres P, et al. High-Resolution Computed Tomography and Histopathological Findings in Hypersensitivity Pneumonitis: A Pictorial Essay. Radiol Bras. 2016;49(2):112-6.

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