Case 350

5. Hypersensitivity pneumonia

【Progress】

He was treated with steroid pulse therapy, bringing about improving of his respiratory symptoms.

【Discussion】

Allergic respiratory disorders include asthma, hypersensitivity pneumonia, and drug induced pneumonitis. Allergic reaction is categorized four types; Type I histamine releases from mast cells, basophils, or eosinophils; Type II occurs antibody adheres to self-antigen causing Graves' disease, Goodpasture syndrome, Rheumatic fever; Type III occurs complex of antigen-antibody adheres to vessel, inducing damages to tissues; Type IV occurs immune-cell-mediated allergy forming granulation tissue with immune cells. Asthma is a representative of Type 1 allergy. Hypersensitivity pneumonia and drug-induced pneumonitis are categorized to be Type III allergy.

Hypersensitivity pneumonia is classified into three stages of acute, subacute and chronic, and at present, into two stages of non-fibrotic and fibrotic (1-6). Antibody of IgG is produced initially around one week after antigen exposure. Then, acute hypersensitivity pneumonia occurs after one week and continues when antigen exposure is consistent. When antigen exposure finalizes, absorption process with fibroblasts or myofibroblasts begins.

Acute or nonfibrotic hypersensitive pneumonitis is depicted radiologically as ground glass opacity. Ground glass opacity is histologically composed of fluid of IgG, IgA and immune cells of lymphocytes, plasma cells and gigantic cells induced by macrophages (1-6). It begins centrilobular ground glass opacity following developmental ground glass to the surrounding, inducing expansion of ground glass opacity.

Fibrotic hypersensitive pneumonia is depicted radiologically reticular fibrotic ground glass opacity with or without honeycomb pattern (1-6). Fibrosis is created by fibroblasts or myofibroblasts. Fibrosis produced by fibroblasts is absorbable while fibrosis from myofibroblasts is unabsorbable because of be formed thick fibrosis. Honeycomb pattern is insoluble fibrosis with apoptosis of alveolar cell type II. When fibrotic hypersensitive pneumonia includes formation of granuloma, it might reflect the response of type IV allergic reaction with immune cells and fibroblasts/myofibroblasts.

In Japan, 70% of hypersensitivity pneumonia is known to occur by Trichosporon cutaneum in the moisture season from June to October (7,8). Trichosporon cutaneum is a mycotic which habituate in aged wood used in olden Japanese houses. Hypersensitivity pneumonia with Trichosporon cutaneum does not arise in areas of Akita prefecture and more north (7, 8).

Hypersensitivity pneumonia is treated with corticosteroids or immunosuppressive medication, antifibrotic drugs, pulmonary rehabilitation and/or oxygen therapy (4).

Hypersensitive pneumonia occurred by electronic smoking for three months in our case. Chest CT depicted ground glass opacity in the whole lung. He received steroid pulse therapy inducing to improve respiratory symptoms.

【Summary】

We presented a fifty-seven-year-old male for dyspnea and cough for about three months after quit cigarette smoking and starting electronic smoking. Chest CT showed ground glass opacity in the whole lung. High resolution CT depicted centrilobular ground glass opacity expanding to the surrounding, leading lobar and whole lung. It is borne in mind that hypersensitivity pneumonia is categorized into non-fibrotic and fibrotic. Although electronic smoking is responsible to cause hypersensitivity pneumonia in our case, seventy percent of hypersensitivity pneumonia in Japan is known to occur by Trichosporon cutaneum in the moisture season from June to October. Trichosporon cutaneum is a mycotic which habituate in aged wood used in olden Japanese houses.

【References】

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