Case 430

3. Mycotic pneumonia (pneumocystis jirovecii pneumonia)

【Progress】

He was transported to a core hospital where hematology expert physicians serve.

【Discussion】

Pneumocystis jirovecii pneumonia (PJP) was once referred to pneumocystis carinii pneumonitis since it was once considered be caused by protozoa but recently clarified be caused by mycosis whose sizes are around 5μm (1-3). The names of carinii and jierovecii are capital names of Czech parasitologists. The mural of mycosis is composed of β-D glucan. Then, in situations of mycotic infection including PJP, the values of β-D glucan elevate more than cut off values of 20 pg/mL(4-6).

The sizes of fungus are around 5μm. The sizes of virus, bacteria, are 0.1μm and 1μm, respectively. Fungus of jirovecii is resident pathogen. However, they usually inhabit respiratory tracts including alveoli obediently in a condition of immune-potency environment, namely normal lymphocytes count. However, in the immunocompromise condition, lymphocytes count less than 600 (4-6), the resident flora activates and proliferates, inducing active pneumonia in symmetric bilateral lobes, mimicking cardiac failure. The immuno-compromised condition that proceeds pneumocystis jirovecci pneumonia are listed: high volume steroid administration (>30 mg/day of prednisone) or long-term (> 4 weeks) administration of low steroid volume (15-30mg/day) under organ transplant, auto-immune diseases of ulcerative colitis, Crohn disease, tumor bearing patients in cancer treatment, AIDS (acquired immune deficiency syndrome) that destruct CD4 lymphocytes, T cell lymphoma, and T cell leukemia (4-6). AIDS arises in the situation under CD4 lymphocytes less than 200/mm^3. It is reported that the decrease of CD4 lymphocytes count is related with opportunistic infection of herpes zoster, candida, cryptococcus, cytomegalovirus, and no tuberculosis mycobacteria (4-6). The typical images of PJP on CT are bilateral ground glass opacity or consolidation spared peripheral pulmonary area whose findings are found in 40% (7-9). Others are bilateral consolidation like acute cardiac failure and acute eosinophilic pneumonia.

In our case of age thirty, laboratory findings revealed myeloblastic cells more than 80%, bilateral ground glass opacity in bilateral pulmonary area on chest CT, that was compatible with diagnosis of PJP pneumonia. Based on my experiences, PJP pneumonia in young patients was found in patients with AIDS and autoimmune diseases treated with steroid administration.

【Summary】

We presented a-thirty-year-old male with appetite loss and general fatigue. Laboratory test revealed hemoglobin 5.8g/dL, platelets 29000, CRP 22.69 mg/dL, white blood cells 11400/mm^3, myeloblastic cells > 80%. Bilateral ground glass opacity spared by peripheral pulmonary area was depicted on pulmonary CT, compatible with pneumocystis jerovicci pneumonia. It is borne in mind that when bilateral ground glass opacity spared with peripheral area in young patients associated with lymphocytes count less than 600/mm^3, mycotic infection of pneumocystis jerovicci pneumonia is often encountered.

【References】

1. Apostolopoulou A, et al: The Pathogenesis and Diagnosis of Pneumocystis jiroveci Pneumonia. J. Fungi 2022, 8(11), 1167;https://doi.org/10.3390/jof8111167
2. Stringer, S.L.et al. Sequence from ribosomal RNA of Pneumocystis carinii compared to those of four fungi suggests an ascomycetous affinity. J. Protozool 1989, 36, 14s–16s.
3. Edman, J.C., et al. Ribosomal RNA sequence shows Pneumocystis carinii to be a member of the Fungi. Nature 1988, 334, 519–522.
4. Fishman, J.A. Pneumocystis jiroveci. Semin. Respir. Crit. Care Med. 2020, 41, 141–157.
5. Alanio, A., et al. ECIL guidelines for the diagnosis of Pneumocystis jiroveciipneumonia in patients with haematological malignancies and stem cell transplant recipients. Journal of Antimicrobial Chemotherapy, 2016;71:2386-2396.
6. Lagrou, K., et al. Pneumocystis jirovecii disease: Basis for the revised EORTC/MSGERC Invasive Fungal Disease Definitions in individuals without Human Immunodeficiency Virus. Clinical Infectious Diseases, 2021; 72, S114-S120.
7. Kuhlman JE, et al. Pneumocystis carinii pneumonia: spectrum of parenchymal CT findings. Radiology 1990; 175:711-714.
8. Hardak E, et al. Radiological features of Pneumocystis jirovecii pneumonia in immunocompromised patients with and without AIDS. Lung 2010; 188:159-163
9. Tasaka S, et al. Comparison of clinical and radiological features of Pneumocystis pneumonia between malignancy cases and acquired immunodeficiency syndrome cases: a multicenter study. Intern Med

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2026.4.17