JBR–BTR, 2010, 93: 264-266.

WEGENER GRANULOMATOSIS MASQUERADING AS PNEUMONIA

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We report a case of an elderly patient with a limited form of Wegener granulomatosis, which simulated the clinical and imaging features of organizing pneumonia. Here we call attention to this atypical case presentation that eloquently illustrates the many faces of Wegener granulomatosis.

Key-word: Wegener granulomatosis.

Report of the case

A 76-year-old woman presented at the emergency room with malaise, chest pain, dyspnoea and cough, and a 2-day history of fever along with transient mental status changes. On examination, her body temperature was 39.4°C, blood pressure was 115/70 mmHg, heart rate 112 beats/min, and respiratory rate 28 breaths/min. The patient had bronchial breathing and crepitations, especially over the right lung. Laboratory test results are shown in Table I. Initial chest radiography and CT scan (Fig. 1) showed bilateral parenchymal consolidations, containing air bronchograms. A bacterial pneumonia was suspected and the patient received a treatment with intravenous (IV) broad-spectrum antibiotics. She was discharged one week later based on clinical recovery. After two days, the patient was febrile again and was admitted to the hospital. Repeat chest radiography showed bilateral, multifocal, solid and cavitary masses confluent at the lung bases. A cavitary mass with an air-fluid level was present in the left upper lobe (Fig. 2A). A new chest CT scan revealed multiple cavitary lesions in both lungs (Fig. 2B). The patient was treated with levofloxacin hemihydrate and vancomycin hydrochloride for 10 days. Methylprednisolone was empirically added to the theurapeutic regimen on day four, and clinical response to treatment was dramatic. The peripheral white blood cell count dropped at 6,470/mm3 with 77% neutrophils and 12% lymphocytes, and CRP was 0.74 mg/L.

Because of the aggressive course of the disease, an open lung biopsy was performed. Histopathologic analysis showed multiple geographic areas of necrosis and granulomatous inflammation (Fig. 3). There was vasculitis of the medium-sized and small pulmonary arteries, veins and capillaries. The diagnosis established was Wegener granulomatosis (WG) of the lung. The absence of systemic disease involvement was suggestive of "limited" disease, which represents a "forme fruste" of Wegener granulomatosis (1, 2). After two weeks of treatment, symptoms resolved and the patient was discharged.

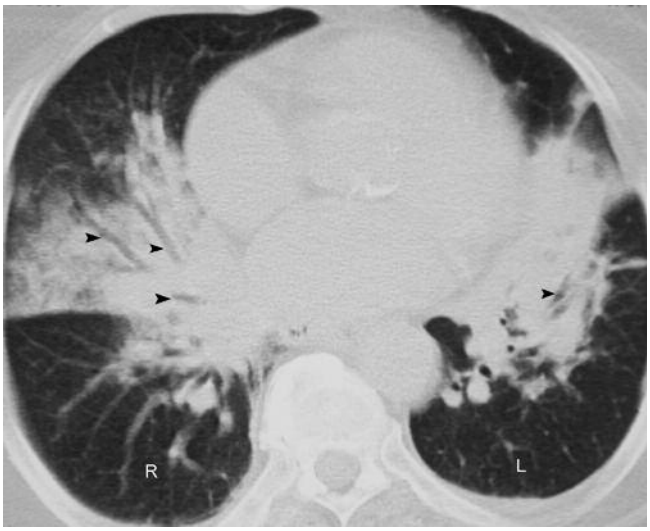

Fig. 1. — Chest CT scan (lung window) on first admission demonstrates bilateral, extensive parenchymal consolidations in the right (R) upper and middle lobes abutting the fissure, and the left (L) upper lobe. Air bronchogram (arrowheads) is evident particularly on the right. Pneumonia was the diagnosis favored at the time.

Discussion

WG is a multi-organ system disease characterized by granulomatous inflammation, tissue necrosis, and vasculitis (1). Although this autoimmune disorder may affect virtually any organ, it has a predilection for the upper respiratory tract, the lungs, and the kidneys (3). Multiple pulmonary nodules or masses that are frequently cavitated are the hallmarks of lung disease. As previous studies have shown, however, WG involving the lungs may also present with non-specific pulmonary infiltrates, which can be initially misdiagnosed as pneumonia (1, 3). In our patient, the clinical manifestations of pulmonary disease were largely derived from extensive infiltrates within the lungs. The presence of pneumonia as the one and only manifestation of WG is very rare (2). Our case is unusual in that involvement of the lungs -in the form of isolated air-space consolidation- was the sole manifestation of disease.

It is well known that the ANCAs may amplify inflammation, affecting primarily the neutrophils. Reportedly, only 10-20% of patients with active, untreated WG are ANCA

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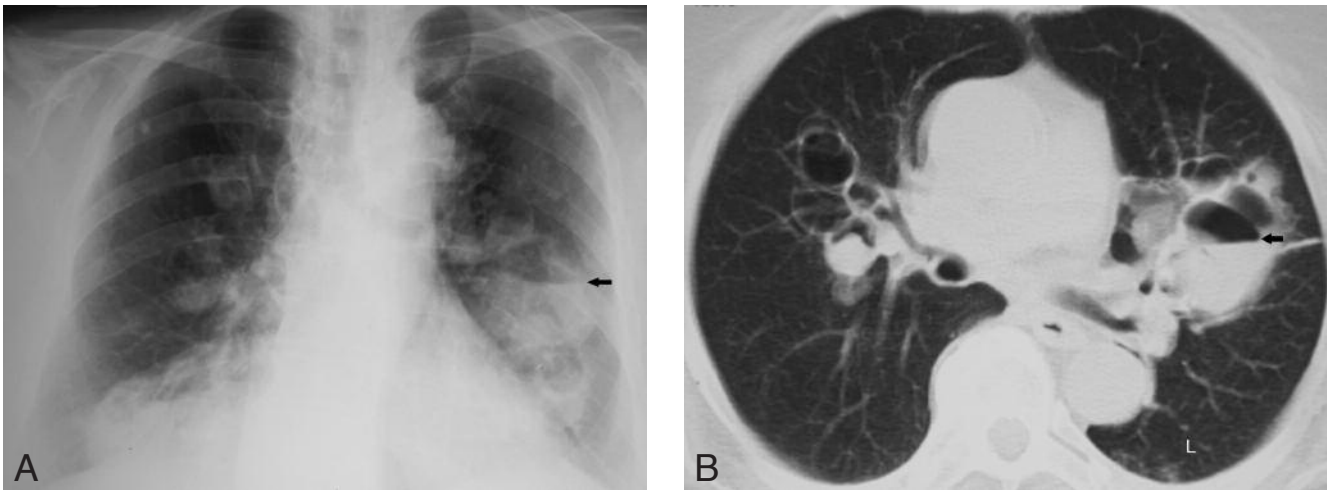

Fig. 2. — A. Posteroanterior chest radiograph two days after discharge on the second admission shows bilateral, multiple pulmonary masses with areas of cavitation. A large cavitary mass with air-fluid level (arrow) is seen in the left paracardial area. B. Chest CT scan (lung window) demonstrates bilateral, multiple solid and cystic lesions. Large cavitary mass on the left (L) contains air-fluid level (arrow). Note the variable thickness of the walls of the cavities.

Table I. — Laboratory data at first and second admission.

	Results		
Parameter	1st admission	2nd admission	Normal value
Haemoglobin, g/dl	12.4	12.7	12-16
White cells x 10^3, /mm^3	13	27,12	4,5-11
Differential count, %			
Neutrophils	85	92	55-65
Lymphocytes	6	3	20-35
Platelets x 10^3, /mm^3	215	203	200-350
Erythrocyte sedimentation rate (ESR), mm/1 h	51	62	6-12
C-reactive protein (CRP), mg/ l	5.7	21.4	0-0,8
Ferritin, ng/ml	119	135	80-200
Urea, mg/dl	76	79	11-54
Creatinine, mg/dl	1.1	1.3	0,5-1,4
Rheumatoid factor (RF)	N/E	Normal	
anti-doublestranded DNA antibodies (anti-dsDNA)	N/E	Normal	
antinuclear antibody (ANA)	N/E	Positive	
antineutrophil cytoplasmic antibodies (ANCAs)	N/E	Negative	

N/E = Not evaluated.

negative (1), while up to 30% of patients with limited WG are ANCA negative (1). The specificity (99%) and sensitivity (91%) of ANCA testing for active disease is high (4, 5). Our case is challenging in that WG was suspected not because it caused pneumonia as the sole manifestation of disease or was ANCA negative but, rather, because of its remarkable response to steroid treatment.

Limited WG, as in our case, certainly poses a difficult diagnostic problem. Other conditions including infection (mycobacteria, fungi, actinomycosis and syphilis), malignancy (squamous cell carcinoma, extranodal lymphoma, plasmacytoma and metastasis), and various immunological disorders (amyloidosis, rheumatoid arthritis, systemic lupus erythematosus, microscopic polyangiitis and the Churg-Strauss syndrome) may mimic WG in its presenting manifestations (1-3). Although limited WG has a more favorable prognosis than its classical counterpart, recognition of disease is essential because untreated disease is almost uniformly fatal (2). In our patient, serial imaging studies demonstrated progressive and destructive lung changes, indicating severe disease. The additional monitoring of inflammatory markers

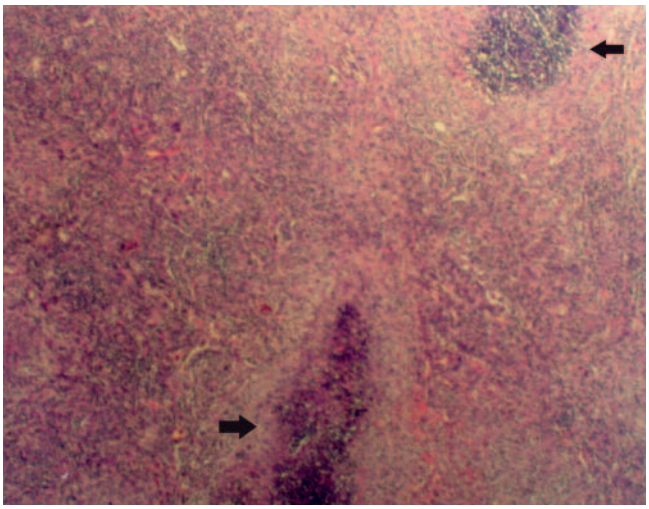

Fig. 3. — Photomicrograph of lung biopsy specimen shows irregular areas of parenchymal necrosis (arrows) surrounded by inflammatory granulation tissue (hematoxylin and eosin, x40).

reflected disease activity over time. Although histopathologic proof was available later on in our case, WG was suspected and included in the differential diagnosis because of the patient's significant and rapid clinical improvement following initial empirical treatment with antibiotics, and, most importantly, steroids. In previous studies, steroids have been associated with complete remission of disease in 75% of the patients (6).

An interesting finding in our case is this patient's limited involvement of WG confined to the lung, without the typical upper airway involvement, systemic vasculitis, or glomerulonephritis. To our knowledge, isolated WG of the lung comprises an unusual manifestation of disease that can easily go undiagnosed. We present this case, not only for its rarity and its benign course after successful treatment with steroids, but foremost for the challenging differential diagnosis of WG masquerading as pneumonia. Indeed, this case of an atypical presentation of disease underscores the clinical versatility of WG that clinicians may need to confront with.

In conclusion, the presence of pulmonary consolidations as the first and only manifestation of WG is extremely rare. However, the persistence and relapse of symptoms in pneumonia after classical therapy with antibiotics is strongly suggestive of WG, even in the absence of generalized disease or ANCA positivity. Histologic proof is often required because pulmonary carcinoma and infection can present an identical clinical and imaging pattern of involvement.

References

1. Stone J., Hoffman G.: Wegener's granulomatosis and lymphomatoid granulomatosis. In: Hochberg M., Silman A., Smolen J., Weinblatt M., Weisman M., eds. Rheumatology, 3rd ed. Edinburgh: Mosby, Elsevier Ltd, 2003, pp 1635-1648.
2. Frazier A., Rosado-de-Christenson M., Galvin J., Fleming M.: From the archives of the AFIP. Pulmonary angiitis and granulomatosis: radiologic-pathologic correlation. *RadioGraphics*, 1998, 18: 687-710.
3. Mayberry J., Primack S., Müller N.: Thoracic manifestations of systemic autoimmune diseases: radiographic and high-resolution CT findings. *RadioGraphics*, 2000, 20: 1623-1635.
4. Rao J., Weinberger M., Oddone E., Allen N., Landsman P., Feussner J.: The role of antineutrophil cytoplasmic antibody (c-ANCA) testing in the diagnosis of Wegener granulomatosis: a literature review and meta-analysis. *Ann Intern Med*, 1995, 123: 925-932.
5. Wiik A.: Testing for ANA and ANCA-diagnostic value and pitfalls. In: Hochberg M., Silman A., Smolen J., Weinblatt M., Weisman M., eds. *Rheumatology,* 3rd ed. Edinburgh: Mosby, Elsevier Ltd, 2003, pp 215-26.
6. Langford C.: Update on Wegener granulomatosis. *Cleveland Clin J Med*, 2005, 72: 689-697.