tive. PSA test was normal. Lung and gastrointestinal tumour markers were negative. Chest x-ray revealed normal pleuropulmonary parenchyma. An ultrasound demonstrated normal kidneys. A renal biopsy was diagnostic of stage I MGN

Conservative treatment began with ACE inhibitors and ARBs. At the fourth month of diagnosis, due to lack of response, CsA was started without success. After sixth month, the patient was switched to treatment with chlorambucil and prednisone for eight months with no response, and this treatment was suspended due to leukocytopenia. A year and a half after the biopsy, partial remission was reached (proteinuria: 5g/day) with conservative treatment. After two years, a node appeared in the left lower lung lobe (Figure). Fibre-optic bronchoscopy confirmed stage IV squamous cell carcinoma. Further analyses showed numerous nodules indicative of pleural, bone and liver metastases.

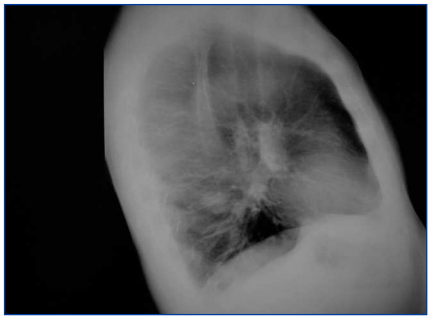

Figure 1. Lateral chest x-ray
Case 2. Pulmonary nodule in the left lower lobe.

DISCUSSION

In the aetiological analysis of the MGN, in which cases must we be 'aggressive' in screening for malignancy, and to what extent? In case 1, the appearance of MGN and a solid tumour was simultaneous, without clear clinical evidence of cancer. In case 2, the tumour appeared 2 years after the diagnosis of MGN, coinciding with partial remission, which calls into question a causal relationship, because it is more plausible that this was a case of a latent tumour activation caused by immunosuppression.

Approximately 10% of the MGN are paraneoplastic, secondary to lung, prostate and gastrointestinal tumours.[1] Lung cancer is the most common tumour type in adult males,[2] smokers, and patients older than 65 years. Many authors advocate an aggressive screening protocol in patients with MGN. The relationship between cancer and MGN may be causal or the consequence of immunosuppressant therapy, or it could be just coincidence. The appearance of tumours has been described as many as 5 years after the diagnosis of MGN.[3]

In recent years, the controversy between idiopathic and secondary causes seems to be somewhat clearer. M-Type phospholipase A2 receptor is associated with idiopathic MGN,[4] and the same can be said of anti-aldose reductase and anti-manganese superoxide dismutase, while the absence of IgG4 glomerular deposits suggests a neoplastic process.[5] However, these diagnostic techniques are still unavailable in many hospitals.

Our cases showed two distinct patterns of association between MGN and tumours. We believe that attending physicians must pay close attention to these patients from the moment of diagnosis and throughout the patient follow-up period in order to facilitate the early detection of cancers that might affect patient prognosis.

Conflicts of interest

The authors affirm that they have no conflicts of interest related to the content of this article.

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Membranous glomerulonephritis associated with myeloperoxidase anti-neutrophil cytoplasmic antibody-associated glomerulonephritis

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To the Editor,

Membranous glomerulonephritis (MGN) is a common cause of nephrotic syndrome in adults which is characterized by formation of subepithelial immune complex deposits with resultant

changes to glomerular basement membrane (GBM), most notably GBM spike formation. The onset of this disorder is slow and the clinical course is often benign. Anti-neutrophil cytoplasmic antibody (ANCA)-associated glomerulonephritis is the most frequent cause of rapidly progressive glomerulonephritis and is usually classified as a pauci-immune type characterized by glomerular *necrosis* and *crescent formation*. MGN complicated by ANCA-associated glomerulonephritis is an unusual concurrence and only rare cases have been reported previously;[1-6] however, none of them was presented in Chinese population and most of the cases reported were related to some backgrounds. Here we first report an elderly Chinese male patient with MGN and myeloperoxidase (MPO)-positive ANCA-associated glomerulonephritis without any detectable backgrounds.

A 64-year-old man presented with arthralgia, shortness of breath, nausea, oliguria, and edema without previous history of disease. Laboratory examinations showed the following results: serum creatinine concentration 350.8μmol/L, serum albumin level 21.3g/L, serum total cholesterol 7.1mmol/L and a 24-hr protein excretion of 5.4g/d. The urinalysis showed 3+ urine protein, 2+ urine blood and RBC casts. MPO-ANCA was detected in serum screening test by indirect immunofluorescence and the serum concentration of MPO-ANCA was subsequently determined by enzyme-linked immunosorbent assay (ELISA) to be 145U/mL (reference range, 0-10U/mL). Other immunological tests showed the decrease of serum complement 3 concentration to 0.571g/L and other autoantibodies including anti-nuclear antibodies (ANAs), anti-Sm antibody, anti-dsDNA antibody, anti-cyclic citrullinated peptide (CCP) antibody, anti-proteinase-3 (PR3)-ANCA and anti-glomerular basement membrane (GBM) antibody were negative. There was no evidence of systemic lupus erythematosus (SLE), infection, malignancy, or drugs. Percutaneous renal biopsy was subsequently performed to determine the diagnosis.

Upon light microscopy, renal biopsy revealed thickening of glomerular capillary wall and 2 out of 19 glomeruli were sclerosed. Four glomeruli showed cellular crescents, 5 showed fibrocellular crescents formation and 2 showed fibrinoid necrosis (Figure 1 A). Immunofluorescence examination displayed granular deposition of IgG and C3 along the glomerular capillary walls (Figure 1 B). Electron microscopy showed thickened glomerular basement membranes with diffuse subepithelial deposits and foot process effacement which was consistent with the stage II of MGN (Figure 1 C). Therefore renal histology and laboratory examinations supported the diagnosis of MGN and MPO-positive ANCA-associated glomerulonephritis.

The patient was treated initially with pulse methylprednisolone 500mg/d

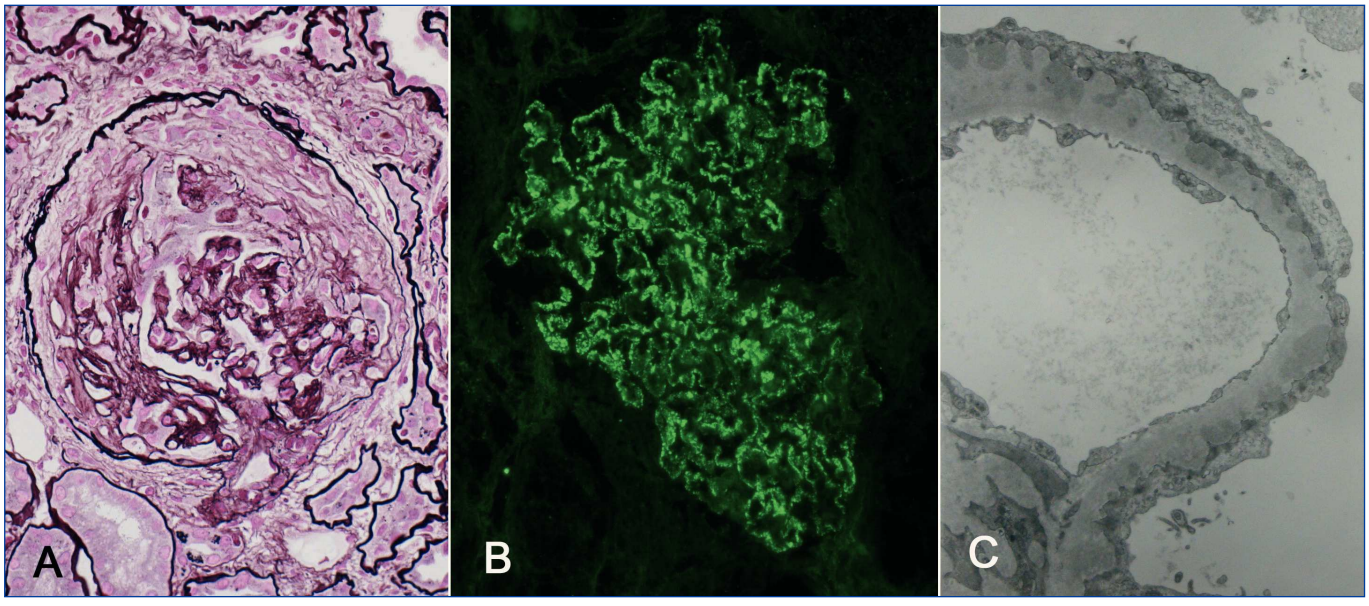

Figure 1. Renal biopsy findings in membranous glomerulonephritis associated with anti-neutrophil cytoplasmic antibody-associated glomerulonephritis.
(A) Light microscopy showing thickened glomerular capillary walls and a fibrocellular crescent (PAM stain, x400).
(B) Immunofluorescence staining revealing deposition of IgG along glomerular capillary walls (x200). (C) Electron micrograph showing thickened glomerular basement membrane with diffuse subepithelial deposits and foot process effacement (x6500).

for 3 days followed by prednisone (40mg/d) and antihypertensives, anticoagulant were also administrated. Because of no sign of improvement shown a week later, steroid pulse therapy was performed again followed by prednisone (40mg/d) and intravenous cyclophosphamide 0.4g once a week. On review after 1 month of treatment, proteinuria and renal function had improved significantly with urine protein down to 1.9g/d and creatinine down to 182.7μmol/L. MPO-ANCA testing was repeated and showed seronegative. The patient remained stable at a follow-up of 1 year.

As we know, crescent formation and fibrinoid necrosis are rarely encountered in membranous glomerulonephritis. Although MGN associated with ANCA-associated glomerulonephritis has been described previously in white adults and Japanese population, most of the cases reported were related to some rheumatic diseases such as SLE,[7] anti-GBM disease,[8,9] malignancy such as esophageal carcinoma,[10] or drugs.[11] The coexistent MGN and ANCA-associated glomerulonephritis without the above backgrounds is a rare occurrence with less case reported. Here we first show the Chinese patient with MGN complicated by ANCA-associated glomerulonephritis without the evidence of underlying backgrounds. Tse WY reported 10 patients with MGN and ANCA-associated glomerulonephritis including 9 males and 1 female and the median age was 63.5 years.[2] Cases described by Nasr SH involved 8 males and 6 females and the median age was 58.7 years.[5] Added with the case of 64-year-old man we present here, MGN associated with ANCA-associated glomerulonephritis may mainly occur in the elderly patients and the incidence in male seemed to be higher than in female. The clinical course is more aggressive than MGN alone and is characterized by nephrotic syndrome, hematuria and acute renal failure with or without systemic vasculitis involving extrarenal organs. Renal pathology involves both the membranous changes and crescent formation with fibrinoid necrosis. As for the prognosis, Tse WY and Nasr SH reported a similar outcome that 50% of patients reaching endpoints of ESRD or death whether or not treated with immunosuppressive agents;[5] however, our patient showed well response to immunosuppressive treatment.

The mechanism of MGN associated with ANCA-associated glomerulonephritis is unknown. Some case reports have noted an association with the presence of anti-GBM antibodies that may play a role in the pathogenesis because the development of glomerular crescents requires disruption of the GBM integrity sufficient to allow the efflux of cells and macromolecules into Bowman's space.[8,9] The autoantibodies in lupus nephritis type III and V or type IV and V may also contribute to the combination of crescentic and membranous glomerulonephritis that is not uncommon in patients with SLE.[7] But in case of MGN associated with ANCA-associated glomerulonephritis without anti-GBM nephritis, SLE and other related diseases, the mechanism is difficult to elucidate because of the fact that the pathogenesis of MGN and ANCA-associated glomerulonephritis is distinct from each other. Whether ANCA is associated with the pathogenesis or not remains unclear and whether MPO-ANCA-associated glomerulonephritis is superimposed on idiopathic membranous nephropathy (MN) or MPO-ANCA-associated glomerulonephritis induce a secondary MGN is still unknown. Suwabe and Watanabe examined IgG subclass deposition and found that the cases with MGN and ANCA-associated glomerulonephritis showed both IgG1 and IgG4 deposited on the glomerular capillary walls, which suggested secondary MGN;[4,6] however, no disease or drug was found to induce secondary MGN. The fact only a few MPO-positive cells in the glomeruli and MPO stains on the glomerular capillary walls near the MPO-positive cells may suggest that the patient had MPO-ANCA-associated glomerulonephritis superimposed on idiopathic MN.[6] But Nasr SH was inclined to regard the co-existence of MGN and ANCA-associated glomerulonephritis as a coincidence.[5] Further research is required to clarify the pathogenesis of the rare occurrence.

In summary, MGN with ANCA-associated glomerulonephritis is a rare dual glomerulopathy seen in patients with heavy proteinuria and acute renal failure. In case of nephrotic syndrome with seropositive MPO-ANCA and progressive renal failure even though without evidence of SLE or anti-GBM nephritis, we should consider the coexistence of MGN and ANCA-associated glomerulonephritis. Although prognosis is variable, remission was observed after administration of steroids and cyclophosphamide in this dual glomerulopathy.

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Conflict of interest

The author declares that there is no conflict of interest associated with this manuscript.

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Pleuroperitoneal communication in peritoneal dialysis patient

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To the Editor,

Peritoneal dialysis (PD) is an increasingly frequent therapeutic option for advanced chronic kidney disease. However, this technique is not exempt from complications, the most common being peritonitis. Although you may also observe infections in the exit site of the peritoneal catheter, infection of the subcutaneous tunnel, hernias, abdominal or lumbar pain, haemoperitoneum, chylothorax, pleuroperitoneal communication or hydrothorax, among others.

The infusion of fluid in the peritoneal cavity increases intraabdominal pressure, which may cause the peritoneal fluid to flow into the chest, leading to pleuroperitoneal communication. Cases of pleuroperitoneal communication secondary to peritonitis have also been described.[1,2]

We present the case of a 77-year-old male with chronic kidney disease, probably secondary to nephroangiosclerosis, who was on continuous ambulatory PD for 15 days. On the 8th day, the patient had an episode of peritonitis, caused by Streptococcus (viridans group) and was treated according to protocol with ciprofloxacin and vancomycin. The patient went to the emergency department reporting dyspnoea, fever and coughing for 24 hours, along with a deficit of ultrafiltration in recent days.

The examination showed revealed a general poor health status accompanied by tachypnoea and bilateral hypoventilation, more pronounced in the right pulmonary area.

A chest x-ray showed a moderate right pleural effusion, which was mild on the left side.

Treatment was started with empirical antibiotics for respiratory infection,

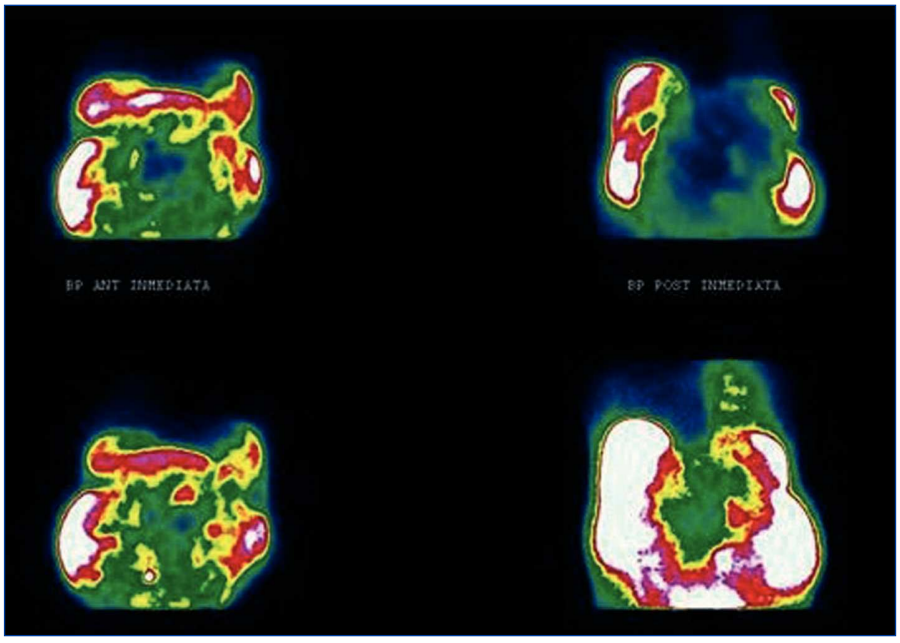

Figure 1. Peritoneal scintigraphy with 99mTc-MAA
Anterior and posterior views in supine position showing the tracer passing to the right hemithorax.