

Case Presentation

A Case of Unusual Colon Mass, Skin Lesions, Kidney Thrombosis and Glomerulonephritis: Pyoderma Gangrenosum or IgA Vasculitis?

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ABSTRACT

Pyoderma gangrenosum is a rare auto-inflammatory skin disorder that usually starts with sterile pustules and rapidly progresses to painful ulcers, which can also happen to the internal organs. IgA vasculitis is characterized by skin purpura with or without joints, kidney and gastrointestinal involvement. They are sometimes rather confusable for similar organs involvement, especially when the skin lesions are polymorphic. We report a case presenting with inflammatory colon mass, skin purpura and pyogenic ulcers, glomerulonephritis and minor kidney thrombosis, mimicking medium-size-vessel vasculitis or IgA vasculitis but finally proved pathologically to be pyoderma gangrenosum associated with IgA nephropathy. The symptoms responded to glucocorticoid and cyclophosphamide. It's concluded that differentiation of pyoderma gangrenosum and IgA vasculitis is feasible by histopathology, and this is important because they will have different medical concerns in the subsequent follow up periods. Moreover, the comorbidity of pyoderma gangrenosum and IgA nephropathy may be explained by some shared pathogenetic processes.

Keywords: IgA vasculitis, IgA nephropathy, Henoch-Schönlein purpura, Pyoderma gangrenosum

Introduction

Pyoderma gangrenosum is a rare auto-inflammatory skin disorder pathologically featured by neutrophilic dermatitis and sterile abscesses. It could be multi-organ involved and associated with underlying systemic diseases including inflammatory bowel diseases, rheumatic diseases and malignancies. On the other hand, IgA vasculitis, used to be called Henoch-Schönlein purpura, is typically presenting with skin purpura, arthritis, gastrointestinal bleeding and IgA nephropathy caused by IgA deposition. Both pyoderma gangrenosum and IgA vasculitis could have skin and bowel involvement but they are distinguishable. Here we report a case presenting with aninflammatory colon mass, followed by purpura,

pyogenic skin ulcers, kidney ischemia and glomerulonephritis, which was finally diagnosed as pyoderma gangrenosum associated with IgA nephropathy, but not IgA vasculitis, based on the analysis of tissue biopsy and patterns of organs involvement.

Case Presentation

A 41-year old male presented with acute bowel obstruction in August 2015 and abdominal computer tomography (CT) identified a mass of 10cm×8cm the ascending colon, as well as hypo perfusion areas in the right kidney (Figure 1). He underwent colon mass resection and ileostomy in the local hospital, and the pathology showed inflammatory alterations. He developed arthritis, purpura, necrotic and pyogenic ulcers over the lower limbs and metacarpal

phalangeal joints (Figure 2) and moderate proteinuria in January 2016.

The laboratory tests showed that the white blood cell count was $13.68 \times 10^9/L$ with 88.2% neutrophils in the peripheral blood. Erythrocyte sedimentation rate was 42mm/h, C-reactive protein was 15mg/L, prothrombin time, activated partial thromboplastin time were normal and d-dimers were 1.27ug/ml. Protein and occult blood were shown in urinalysis. 24-hour urine protein was quantified to 1.3g to 1.8g. Stool occult blood was positive as well. Serum infection screening for HIV, HBV, HCV, syphilis and tuberculosis were all negative. Anti-nuclear antibody, anti-ENA antibodies and antiphospholipid antibodies were negative. Serum cryoglobulin was positive. Serum immunoglobulins including IgG4 were within normal range, without monoclonal protein detected with immunoelectrophoresis.

The aorta and lower limbs CT angiography failed to identify angiostenosis. The colon pathological slides were reviewed, and diffuse inflammation and fibrosis of the bowl wall was found, with neutrophilic infiltration; the latter, as the main pathological feature of pyoderma gangrenosum, was also shown in the skin biopsy specimen. The kidney pathology was consisted with IgA nephropathy (Figure 3), with cellular crescents in 3 glomeruli and IgA deposition at the glomerulus mesangium. The patient's symptoms and urine protein responded to prednisone plus cyclophosphamide, and he was maintained with low dose prednisone plus colchicine. He underwent ilecolostomy in December 2016.

Discussion

Pyoderma gangrenosum is a neutrophil-mediated inflammatory dermatosis characterized with painful, purulent cutaneous ulcerations more likely affects adults of middle age [1]. As it could affect internal organs with sterile abscesses [2,3], it is regarded as a generalized inflammatory condition nowadays.

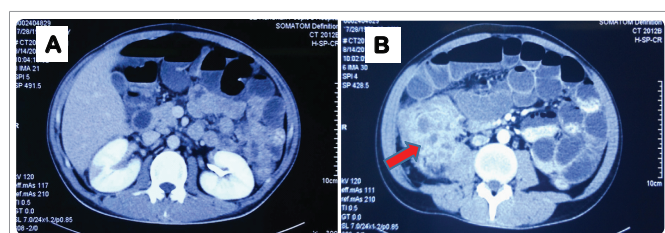


Figure 1: A. Hypo perfusion area in the right kidney. B. Wall thickening with nonhomogeneous density of ascending colon (red arrow).



Figure 2: Purpura and necrotic, pyogenic ulcers over lower limbs and metacarpal phalangeal joints.

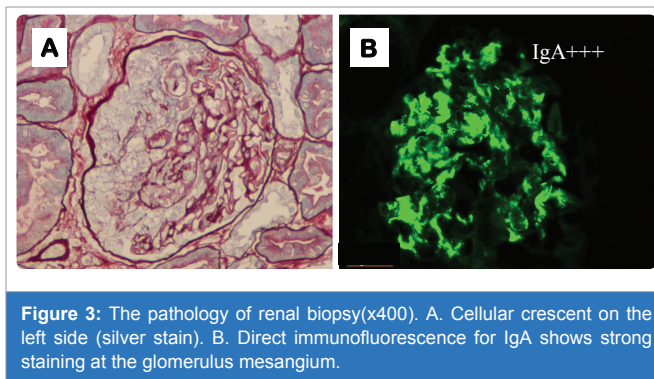


Figure 3: The pathology of renal biopsy(x400). A. Cellular crescent on the left side (silver stain). B. Direct immunofluorescence for IgA shows strong staining at the glomerulus mesangium.

Above all, about 50% of patients show underlying diseases [4] including inflammatory bowel diseases [5,6], rheumatic diseases [6-9], hematological disorders [6,10,11] and neoplasia [6], etc. Paraproteinemia especially IgA monoclonal gammopathy is also well recognized [12]. Cryoglobulin might also be the component of paraproteins.

The diagnosis of pyoderma gangrenosum relies on clinical findings and is supported by histopathology. No specific laboratory test for pyoderma gangrenosum is available. Once the diagnosis is established, investigations should be carried out for the underlying diseases.

The patient's presentation of colon mass, arthritis, skin lesions, kidney ischemia and proteinuria strongly indicating systemic disease, and systemic vasculitis with medium vessels involved was initially suspected. Subsequent investigations helped to exclude polyarteritis nodosa, ANCA-associated vasculitis and vasculitis secondary to malignancies, infection and rheumatic diseases including systemic lupus erythematosus and rheumatoid arthritis. The diagnosis of pyoderma gangrenosum was supported by colon and skin histopathology.

Pyoderma gangrenosum is rarely complicated with glomerulonephritis, so kidney biopsy was performed and the pathology showed IgA nephropathy, prompting the consideration of IgA vasculitis as differential diagnosis. Indeed, the presentation of skin purpura, arthritis and IgA nephropathy indicated IgA vasculitis [13], which was occasionally reported to be complicated with pyoderma gangrenosum [14,15]. Either pyoderma gangrenosum or IgA vasculitis could have skin, joint and gastrointestinal involvement, and could possibly contribute to kidney ischemia shown in CT images (Figure 1A) for coagulation disorders induced by auto inflammation. However, they can be differentiated with histopathology by the type of infiltration cells and deposition of immunoglobulins. That is, pyoderma gangrenosum is pathologically featured by neutrophilic infiltration (or sterile abscesses) and immunofluorescence staining pattern is unspecific, while IgA vasculitis presents with leukocytoclastic vasculitis and IgA deposition. Moreover, pyoderma gangrenosum is reported to involve the colon [16], while IgA vasculitis affects small intestine more often. In a word, the patient's skin lesions and inflammatory colon mass may be attributed to pyoderma gangrenosum rather than IgA vasculitis, and so as IgA nephropathy and cryoglobulinemia.

How can pyoderma gangrenosum complicated by IgA nephropathy? It is well-known that IgA nephropathy is commonly

associated with many inflammatory or immunologic diseases, such as ankylosing spondylitis, inflammatory bowel diseases, and diffused connective tissue diseases. It is thought to be induced by glomerular deposition of IgA regardless of serum IgA level or presentation of IgA monoclonal gammopathy [17]. Impaired mucosal immunity takes part in the pathogenesis [18,19]. On the other hand, the pathogenesis of pyoderma gangrenosum is less well-defined. However, it is thought to be neutrophil-mediated, and the cytokines or chemotaxis (interleukin 1, interleukin 8, TNF- α , etc.) involved [20] may also predispose glomerular inflammation in IgA nephropathy [21,22].

In a word, it was suspected that the local immune disorder caused an inflammatory colon mass with silent onset, and the impaired intestinal mucosa helped to trigger the subsequent and enhanced systemic inflammation including the development of dermatitis, arthritis, coagulation disorder and IgA nephropathy.

Conclusion

Pyoderma gangrenosum can have multi-organ involvement and be associated with several systemic diseases. This case indicated that pyoderma gangrenosum could mimic systemic vasculitis including IgA vasculitis so rheumatologists should learn to know about this disease entity. Careful analysis with tissue biopsy is important to make differential diagnosis, which is essential because there is different concern for each disorder, that is, pyoderma gangrenosum should be followed up due to increased risk of malignancy in future while IgA vasculitis may progress to end-stage renal disease. Finally, the comorbidity of pyoderma gangrenosum and IgA nephropathy may be explained by some shared pathogenesis, according to preliminary literature review.

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