

# Tumor-like Lesions in Patients with Granulomatosis with Polyangiitis: A Case Series

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**ABSTRACT** **Background:** Granulomatosis with polyangiitis (GPA) is a rare small vessel vasculitis. It usually involves the respiratory tract and kidneys. Rarely, tumor-resembling inflammatory changes ensue.

**Objectives:** To report three unique cases of GPA presenting with tumor-like lesions in various organs.

**Methods:** We presented three cases of GPA. Case 1 presented with typical upper respiratory symptoms of GPA and a mediastinal mass. Case 2 presented with low back pain, a large retroperitoneal mass, and nodular skin lesions. Case 3 presented with epigastric pain and a paravertebral inflammatory mass.

**Results:** The patients were treated successfully with rituximab.

**Conclusions:** Clinicians should be aware of this presentation of granulomatosis with polyangiitis, which is known as Tumefaction Wegener's granulomatosis.

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**KEY WORDS** granulomatosis with polyangiitis, inflammation, tumor lesions, vasculitis

Granulomatosis with polyangiitis (GPA) is an idiopathic systemic vasculitis affecting small and medium-sized arteries. It is a rare disease with an estimated incidence of 3–14 per million and a prevalence of 27–157 per million. It presents between 45–60 years of age with an equal sex distribution [1]. The blood vessels of the upper and lower respiratory tract and kidneys are mostly involved [2]. However, the necrotizing vasculitic process can affect blood vessels of other tissues, including the peripheral and central nervous systems, gastrointestinal tract, urogenital tract, skin, ophthalmic apparatus, and endocrine glands [3,4]. The pathological hallmark is necrotizing vasculitis with granuloma formation [5]. However, on rare occasions, GPA can manifest as localized or infiltrating tumor-like lesions without a vasculitis component [6], making the diagnosis more difficult.

We report three cases of GPA presented with inflammatory tumor-like lesions.

## PATIENTS AND METHODS

### CASE 1

A 53-year-old female presented with tender ulcerative lesions in her gingiva, purulent-bloody nasal discharge, epistaxis, and dacryocystitis that developed over 2 months. Her medical history included past smoking and Graves' disease treated with methimazole. She had no dyspnea, rash, fever, chills, or weight loss. Chest radiography was normal. Laboratory and kidney function tests were within normal limits except for an elevated erythrocyte sedimentation rate (ESR) of 45 mm/hour, a C-reactive protein of 80 (mg/l), and a positive PR3-ANCA. An eyelid biopsy showed granulomatous inflammation with a foreign-body giant cell reaction.

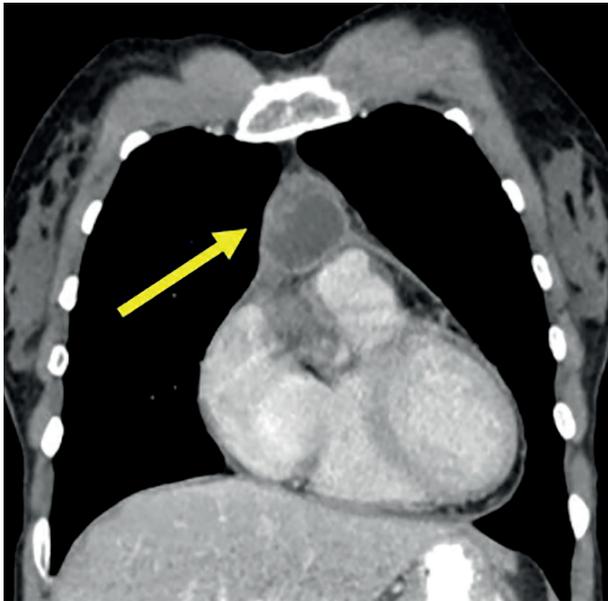
A diagnosis of GPA was given based on the typical clinical findings, positive serology, and the granulomas seen on biopsy. Echocardiography, a cardiac magnetic resonance imaging (MRI), and total body computed tomography (CT) scan were performed to estimate the extent of the disease. Echocardiography was normal. The cardiac MRI showed pericardial thickening and late pericardial enhancement, findings consistent with pericarditis. The CT scan revealed a 37 mm mass in the anterior mediastinum and a thickened pericardium [Figure 1A].

### CASE 2

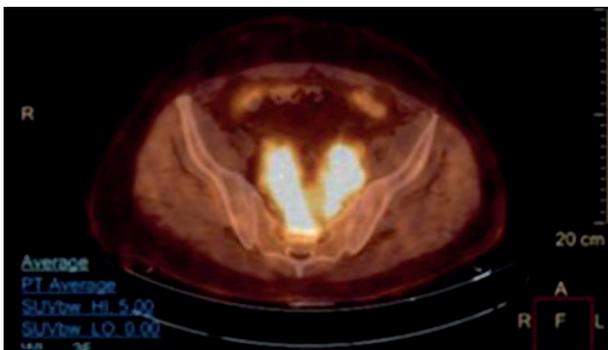
A 39-year-old male presented with severe lower back pain. His medical history included GPA glomerulonephritis leading to end-stage renal failure treated by hemodialysis 2 years earlier. X-ray and CT scan of the whole spine did not reveal any pathology. Therefore a positron-emission tomography/computed tomography (PET/CT) was performed, which demonstrated an 18 mm × 61 mm × 10 mm retroperitoneal mass engulfing the descending aorta, inferior vena cava and both ureters and hydronephrosis [Figure 1B]. A CT-guided biopsy of the mass revealed fibromuscular tissue with chronic granulomatous inflammation and areas of necrosis, with and without cellular debris. The fea-

**Figure 1.** Imaging findings of the tumor like lesions

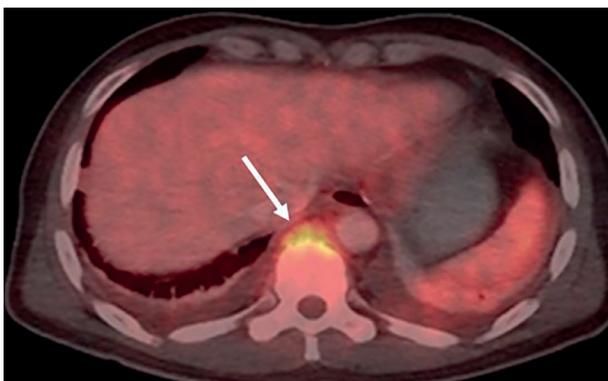
**[A]** Case 1: A CT scan showing a mass within the anterior upper mediastinum



**[B]** Case 2: A PET/CT scan showing intense tracer uptake of the inflammatory mass extending from the retroperitoneum to the lower pelvis



**[C]** Case 3: A PET/CT scan showing increased tracer uptake in a paravertebral mass at the level of T8-11



tures were suspicious for GPA, but vasculitis was not identified. Later, several painful 1–2 cm nodules appeared on his right elbow, from which a skin punch biopsy showed granulomatous dermatitis, neutrophils, and nuclear dust focally surrounding blood vessels with focal features of vasculitis suggesting GPA.

**CASE 3**

A 53-year-old male presented with one month of epigastric pain radiating to his upper back, accompanied by weight loss and night sweats without fever. In addition, he experienced cervicalgia and arthralgia. Vital signs at admission were normal. Physical examination showed mild limitation of the cervical spine range of motion. There were no signs of arthritis in the peripheral joints, skin stiffness, or rash. Heart sounds were normal, and the lungs were clear on auscultation. Abdominal examination revealed epigastric tenderness, without guarding or rebound.

Laboratory testing, including levels of IgG subclasses, were within normal limits except for elevated CRP and high titers of C-ANCA and anti-proteinase 3. A CT scan demonstrated a paravertebral mass of 6 × 1 cm at the T8-11 level and lymphadenopathy posterior to the aorta at that level [Figure 1C]. Biopsy could not be performed due to the proximity to the aorta. Nevertheless, the patient was diagnosed with GPA.

**RESULTS**

**CASE 1**

Thoracoscopy was performed to obtain tissue biopsy from the mediastinal mass and the pericardium. Histology from the mediastinal mass showed fibro-adipose tissue with diffuse areas of inflammation composed of neutrophils, foamy macrophages, lymphocytes, plasma cells, and eosinophils. Micro-abscesses were present as well. Some were surrounded by epithelioid cells, which created an ill-defined granuloma. Giant cells were also observed, yet there was no evidence of inflammatory vasculitis or geographic necrosis. Still, the overall morphological features raised the possibility of GPA involvement in the pericardium and the mediastinum. The patient was treated with high-dose steroids, followed by rituximab. A surveillance chest MRI was repeated after 4 months in which the mediastinal mass was no longer present. However, late gadolinium enhancement of the pericardium was still detected.

**CASE 2**

Treatment with rituximab was initiated. A substantial reduction in the size of the retroperitoneal mass and the skin nodules was observed.

**CASE 3**

The patient was treated with high-dose steroids, followed by rituximab. A consecutive PET/CT was performed after 4 months that showed complete disappearance of the paravertebral mass.

**Table 1.** Characteristics of the patients diagnosed with tumor-like lesions

Characteristic	Case 1	Case 2	Case 3
Age, years	53	39	53
Sex	Female	Male	Male
ANCA serology	Positive	Positive	Positive
Tumor like lesion characteristics	Anterior mediastinal mass	Retroperitoneal mass	Paravertebral mass
Associated clinical findings	Purulent nasal discharge, gingival ulcers, pericarditis	End-stage renal disease	Constitutional (night sweat, weight loss)
Treatment	Rituximab	Rituximab	Rituximab
Outcome	Complete resolution	Reduction in size	Complete resolution

## DISCUSSION

While GPA is characterized mainly by upper and lower respiratory tract with renal involvement, virtually any organ system may be affected. The patients we describe presented with inflammatory masses in various organ systems, executing mass effect on adjacent organs. Goulart and colleagues [6] coined this presentation of GPA as Tumorlike Wegener's granulomatosis. This distinct non-vascular manifestation of GPA leads to tissue destruction. It appears that the underlying pathophysiological mechanism responsible for these tumor-like lesions differs from the classical necrotizing vasculitis. The lesions are almost or entirely devoid of necrotizing vasculitis. Instead, they are abundant with fibroblastic proliferation, granulocytic inflammation, microabscesses, and collagen necrobiosis [6].

Inflammatory tumor-like lesions in GPA are not restricted solely to GPA [7] and were also described in other vasculitides such as giant cell arteritis (GCA), periarteritis nodosa (PAN), and Behçet's disease [8]. Kariv et al. [8] summarized and analyzed 79 patients with different systemic vasculitis presenting as tumor-like lesions, of which 28 were found to be associated with GPA. The involved organs were highly diverse and included the retroperitoneum and the mediastinum among others, but did not include the skin (case 2) or paravertebral mass (case 3). Almost half (48%) of the patients underwent surgery to further evaluate the suspected masses further. Only four patients reported constitutional symptoms (weight loss, night sweat, and fever) that accompanied their tumor-like lesions. In addition, the aforementioned lesions were the sole presentation of GPA, while in our cohort the lesions accompanied other, more common clinical manifestations of GPA (cases 1 and 2). In case 3, the tumor-like lesion was the presenting and exclusive clinical finding of GPA.

As GPA is associated with increased risk for malignancy [9] and also considered a great masquerader of malignancy [10], we support the approach of trying to obtain tissue diagnosis of the suspected masses. Indeed, biopsies were obtained in cases 1 and 2. The paravertebral mass of case 3 was not biopsied due to its hazardous proximity to major blood vessels.

Significant improvement was observed in all of the patients following treatment with rituximab; thus, illustrating rituximab's efficacy among the small subset of GPA patients who presents with an inflammatory tumor-like lesion, rather than the typical clinical features.

## CONCLUSIONS

Tumor-like masses in various organs can be found in GPA and hamper the diagnostic effort, especially when the accompanying and more common clinical findings are absent. Caregivers should be aware of this uncommon presentation.

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