CT Findings of Paranasal Sinuses in Wegener’s Granulomatosis
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Patient: 63 years, female

Clinical History:
A 63 year old female with known Wegener’s Granulomatosis presented with a 6 months history of recurrent sinusitis.

Imaging Findings:
A 63 year old female known Wegener’s Granulomatosis presented with a 6 months history of recurrent sinusitis and right orbital cellulitis. On clinical examination, there were signs of right orbital cellulitis. Nose examination showed mild deviated nasal septum and a few crusts in the nose with no signs of bleeding or infection. Subsequently patient went for CT scan of para-nasal sinuses and orbit. The CT scan showed diffuse sclerosis and thickening of the bony outlines of para-nasal sinuses mainly maxillary sinuses (Fig 1). There is truncation of the left middle turbinate (Fig 2) and erosion of the right lamina papyracea (Fig 4). Nasal septum was perforated and S shaped (Fig 3). Widening of the right osteomeatal complex was also noted (Fig 2). The frontal, sphenoid, maxillary and anterior ethmoid para-nasal sinuses are totally opacified (Fig 2-5).

Discussion:
Wegener’s granulomatosis (WG) is defined as a granulomatous inflammation of the upper and lower respiratory tract and systemic vasculitis of small and medium sized vessels which is often accompanied by a necrotizing glomerulonephritis. The aetiology of the disease is still unknown [1]. The mean age of onset is 40 year and sex distribution is male:female = 2:1 [2].

WG usually starts as a limited and localized organ manifestation in the upper respiratory tract and it generalizes, if untreated, with pulmonary and renal involvement. Symptoms in the head and neck region are observed in up to 95% of the patients with WG. Sinusitis, crusting of the nose, development of a saddle nose, middle and inner ear symptoms and subglottic stenosis are common manifestation [1]. Chronic sinusitis is a well-known clinical feature of the disease. Mucosal abnormalities of the nose and para-nasal sinuses have been well-characterized and range from granulomatous lesions to diffuse mucosal thickening. In contrast, abnormalities of the underlying bone of the para-nasal sinuses in this disease have not been well-described, and reports have been limited [3].

The pathomorphological diagnostic criterion is known as Wegener’s triad: 1) necrotizing granulomatous inflammation of upper and/or lower respiratory tract, 2) systemic or focal necrotizing vasculitis involving arteries and vein, and 3) focal segmental necrotizing crescentic glomerulonephritis. According to the current theory of pathogenesis of Wegener’s granulomatosis, Staphylococcus aureus is involved. The rise in ANCA (Anti-neutrophil cytoplasmic antibody) level during vascular inflammation is very important for monitoring disease [4].

CT imaging of sinuses in WG should be combined with other clinicopathologic and laboratory studies to confirm the diagnosis of WG [5]. One study described pathologies of sinonasal CT in 28 patients with Wegener’s granulomatosis.
and the following CT findings were observed in patients with Wegener's granulomatosis: 1) bony destruction, mainly of the nasal cavity, maxillary sinuses, and mastoid cells; 2) sclerosing osteitis, mainly of the maxillary sinuses and mastoid cells; 3) bony thickening, mainly of the maxillary sinuses and mastoid cells; and 4) mucosal thickening, mainly of the maxillary sinuses [5]. Bony changes on sinus CT scan may provide radiological evidence of underlying Wegener's granulomatosis when clinical suspicion is high [3]. Medical therapy consisting of corticosteroids and immunosuppressive agents is the mainstay of treatment in Wagener’s granulomatosis, whereas surgery is reserved for selected head and neck manifestations. With appropriate medical and surgical treatment, many patients living with Wagener’s granulomatosis can enjoy a good quality of life [6].

Differential Diagnosis List: Paranasal sinuses manifestations of Wegener’s Granulomatosis

Final Diagnosis: Paranasal sinuses manifestations of Wegener’s Granulomatosis

References:


Description: Diffuse sclerosis and thickening of the bony outlines mainly maxillary sinuses Origin:
Figure 2

Description: Truncation of the left middle turbinate. Origin:
Figure 3

**Description:** Perforated nasal septum

**Origin:**
Description: Erosion of the right lamina papyracea. Origin:
Description: Mucosal thickening of the frontal paranasal sinuses. Origin: