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# New-onset psoriasis after rituximab for the treatment of granulomatosis with polyangiitis: A case report and review of the literature

## ABSTRACT

Psoriasis is a chronic, immune-mediated, inflammatory condition seen frequently in clinical practice. Psoriasis may occur during different biologic therapies; however, this subject is still investigated. This case presents a 48-year-old female patient with granulomatosis with polyangiitis

(GPA) treated with rituximab that developed drug-related psoriasis. The pathogenetic mechanisms that may underlie such relationships are not yet understood.

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**KEY WORDS:** drug-induced-psoriasis; rituximab; psoriasis; granulomatosis with polyangiitis; biological treatment, paradoxical effect

## CASE REPORT

The case is reported of a 48-year-old female patient with granulomatosis with polyangiitis (GPA) whose first symptoms in the form of fever, cough, purulent-bloody nasal discharge, hearing loss and weight loss occurred in January 2014. Treatment was started with mycophenolate mofetil (MMF) in combination with glucocorticosteroids (GCS) achieving remission induction. In October 2014, a lesion with lysis was found in segment three of the left lung (Fig. 1B). Cyclophosphamide (CYC) was implemented for treatment. Further exacerbations of the disease occurred in 2015, at which time posterior ischaemic neuropathy of the right eye and oculomotor nerve damage were diagnosed. Treatment with rituximab (RTX) was administered achieving remission of GPA. Seven months after completion of the second cycle (February 2019), the patient was diagnosed with skin and nail psoriasis. The patient had no family history of skin and nail psoriasis

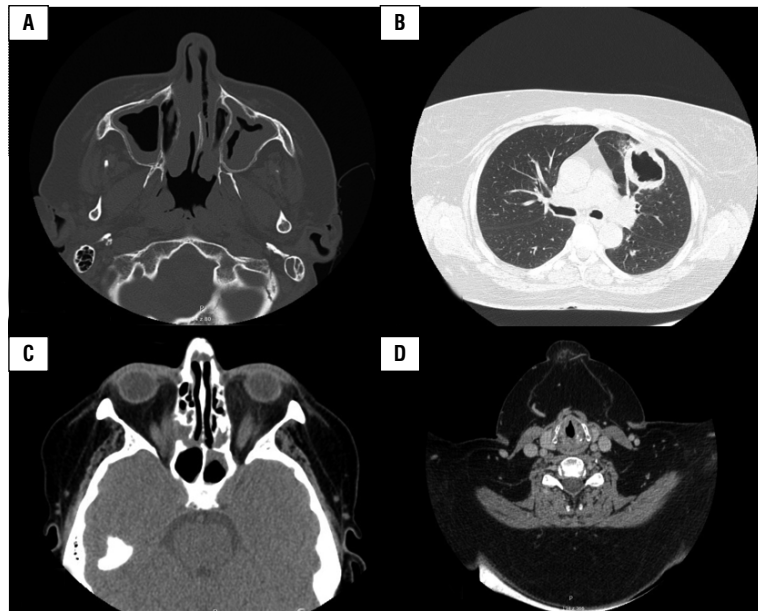
or psoriatic arthritis. Topical treatment, including mometasone, was initiated. In May 2019, a recurrent exacerbation of the disease occurred in the form of subglottic laryngeal stenosis (Fig. 1D). To induce remission this time intravenous pulses of methylprednisolone and CYC were implemented initially with good effect and regression of psoriatic skin lesions was observed (Fig. 2). Due to another exacerbation of the underlying disease, the patient required a return to RTX treatment. Unfortunately, after several months of GPA remission, the patient died of COVID-19. SARS-CoV-2 coronavirus vaccine was not yet available.

## DISCUSSION

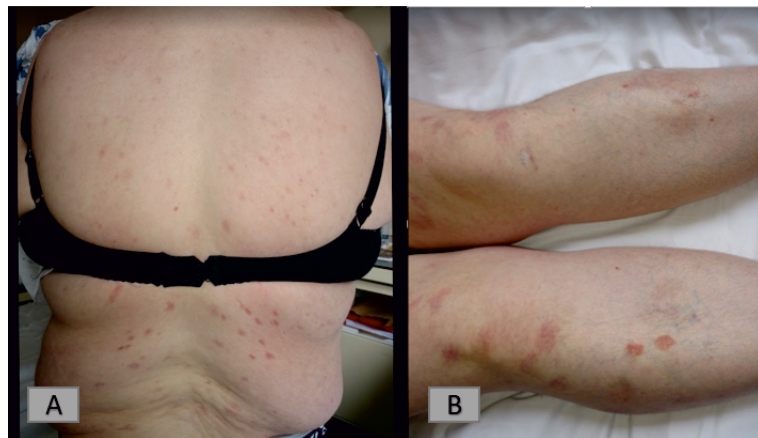
This publication aimed to highlight the possible influence of drugs with a monoclonal antibody structure on the development of psoriasis [1]. Based on the analysis of numerous case reports and two systematic reviews of the literature it was concluded that psoriasis may

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**Figure 1.** CT scan of a patient with GPA: **A.** Massive thickening of the paranasal sinus mucosa; **B.** A tumour with disintegration in segment 3 of the left lung; **C.** An abnormal mass in the medial part of the right orbit with bone destruction and modelling of the medial rectus muscle; **D.** A soft tissue cuff in the subglottic part of the larynx



**Figure 2.** Desquamative psoriatic skin lesions of the back (**A**) and lower extremities (**B**) in a patient during another cycle of GPA remission inducing treatment

occur regardless of the type of underlying disease that is the indication for biological drug inclusion, but that most of the data concern patients with rheumatoid arthritis [2–6]. In 2007, Dass et al. described three cases of psoriasis development in patients receiving RTX for serum-negative RA, serum-positive RA and systemic lupus erythematosus [7]. Markatseli et al. in 2009 reported a case of psoriatic skin lesions after the second cycle of RTX treatment of a patient with RA [8]. A similar reaction was observed in 2013 by Guidelli et al. 3 months after the second course of RTX in a 69-year-old patient with RA [9] and by Tous-sirot [10]. Fiorillo et al. in 2014 described a case of RTX-induced psoriasis in a 16-month-old

child [11]. Subsequent cases of psoriasis associated with RTX treatment were described by Mok et al. [12], Venables et al. [13] and Kim et al. [14]. A case report of psoriatic arthritis in a woman treated with RTX for granulomatosis with polyangiitis was found in the available literature [15]. After reviewing the literature, it is noted that reports of a possible association between RTX use and the onset of psoriasis are inconclusive. The pathogenetic mechanisms that may underlie such relationships are not yet understood. One scenario is that B-lymphocyte depletion may create conditions for an abnormal T-lymphocyte response to external factors, including infectious agents, and indirectly promote the development of psoriasis [16].

## CONCLUSIONS

However, despite the potential side effects, when facing a life-threatening patient, which is undoubtedly a severe exacerbation of GPA with

multi-organ involvement, it should be remembered that according to the guidelines of international scientific societies and based on clinical practice, RTX represents one of the most effective therapeutic options in this indication.

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