

Letter to  
Editor

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## Ground glass opacities in COVID-19 pneumonia- The good, the bad and the ugly

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### INTRODUCTION

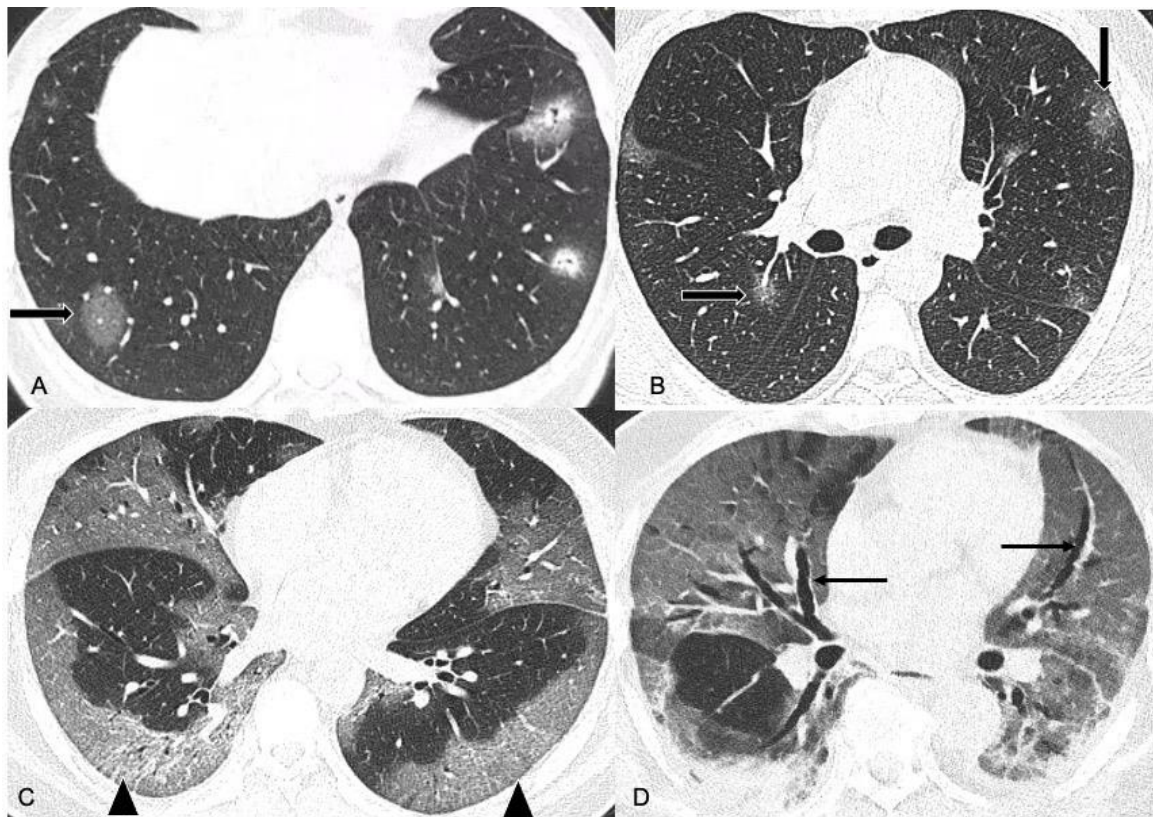
Ground glass opacities (GGO) have emerged as the imaging hallmark of COVID-19 pneumonia. GGOs can be encountered at any stage of the disease. The aim of this letter is to report the types of GGO observed on CT scans of patients with COVID-19 pneumonia, and how these likely correlate with the reversibility. CT patterns of GGO can be of three predominant types - pure GGO (pattern I), GGO with intralobular septal thickening i.e. crazy paving pattern (pattern II), and diffuse GGO with bronchial dilatation (pattern III). In terms of distribution, these can range from focal rounded lesions, multifocal involvement, classical subpleural with lower lobe dominance to diffuse lung involvement.

These patterns, in addition, reflect a temporal evolution. <sup>(1,2)</sup> GGO in diffuse lung diseases and infections is usually taken as a reversible form of lung injury. However, in the authors' experience, some forms of GGO such as pattern I are likely to reverse; the response is variable in pattern II and the pattern III mostly reflects severe disease and is less likely to resolve - the good, the bad and the ugly.

On histology, the early form of GGO represents the alveolar and interstitial edema, crazy paving

represents the late exudative or proliferative stage of diffuse alveolar damage (DAD), while bronchial dilatation reflects more advanced diseases. <sup>(3,4,5)</sup> Hence, in the context of COVID-19 pneumonia, GGO can have variable prognostic implications as these are seen across varying severities and most stages.





**Fig.1. A, B. Pure, multifocal pattern I of GGO (thick arrows) –the good**  
**C. GGO with intralobular septal thickening i.e. crazy paving pattern II (arrowheads)–the bad**  
**D. Diffuse GGO with bronchial dilatation (thin arrow), pattern III – the ugly.**

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