Systemic Capillary Leak Syndrome Caused by Granulocyte Colony-Stimulating Factor

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To the Editor We read with interest the recent article on a case of idiopathic systemic capillary leak syndrome (SCLS) with high serum levels of granulocyte colony-stimulating factor (G-CSF) on exacerbation in Internal Medicine (1). As early as 1994, we reported two cases of malignant lymphoma causing SCLS in Internal Medicine (2). In the case reported by Nakagawa et al, the cause of SCLS was idiopathic; they speculated on the cause of an increased serum level of G-CSF among the various cytokines measured according to the severity or exacerbation of SCLS (1). Our cases were observed after the administration of G-CSF at the nadir of neutropenia after high-dose chemotherapy with or without autologous hematopoietic stem cell transplantation (HSCT) (2). These results demonstrate that G-CSF is responsible for the pathogenesis of SCLS, irrespective of whether the serum level increases idiopathically or after therapeutic administration. It has been reported that SCLC occurs after infusions of interleukin (IL)-2, IL-4, tumor necrosis factor, granulocyte macrophage colony-stimulating factor (GM-CSF), and G-CSF as well as after autologous and allogeneic HSCT (1, 2). Interstitial pneumonia was observed in patients receiving G-CSF after chemotherapy, particularly in patients with non-Hodgkin’s lymphoma (3). The symptoms of interstitial pneumonia resemble those of respiratory distress syndrome, the main symptom of SCLS. The mechanisms of these symptoms have been discussed (1, 2). G-CSF increases the production of granulocytes and the release of cytokines in the lungs, as well as increases the expression of adhesion molecules. Vascular permeability is increased due to the endothelial damage caused by superoxide anion radicals produced by the activated and increased granulocytes. These granulocytes interact with various cytokines.

The symptoms of SCLS in these cases were ameliorated by the administration of corticosteroids (1, 2). Medical professionals should in mind this particular adverse effect of G-CSF.

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References