

쥐에서 시스플라틴 신독성에 대한 글루타민의 보호효과

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The Protective Effect of Glutamine on Cisplatin-Induced Nephrotoxicity in the Rat

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Cisplatin is an important antitumor agent used for treating various solid tumors. The key limitation is a potent toxin to renal tubules and is associated with decline in renal function. This study examined the protective effect of glutamine on renal injury induced by cisplatin in the rat. Male Sprague-Dawley rats were divided into four groups, after which cisplatin injection was performed: untreated, treated with 1 g/kg glutamine, treated with 10 mg/kg cisplatin and treated with glutamine after cisplatin. After 3 days, renal function, histological changes, and apoptotic death were investigated. Cisplatin injection produced severe renal failure. In contrast, administration of glutamine significantly reduced both the BUN and creatinine levels compared with cisplatin alone. The improvement in renal function was accompanied by less severe histologic damage. Cisplatin treatment resulted in severe tubular injury reflected by cast formation, loss of brush border membranes, sloughing of tubular epithelial cells, and dilation of tubules. These changes were markedly reduced in kidneys from animals injected with cisplatin and glutamine. Levels for cleaved caspase-3 and PARP were significantly increased in cisplatin-treated kidney. Glutamine was able to decrease the caspase-3 activation. Therefore, the present study showed a significant protective effect of glutamine on cisplatin nephrotoxicity. We suggest the potential utility of glutamine might be helpful to patients with renal dysfunction induced by cisplatin.

Key Words : 시스플라틴, 신독성, 글루타민
Cisplatin, Nephrotoxicity, Glutamine