Combination of allopurinol and hyperbaric oxygen therapy: A new treatment in experimental acute necrotizing pancreatitis?

(World J Gastroenterol. 2007 Dec 14;13(46):6203-7)

Comert B, Isik AT, Aydin S, Bozoglu E, Unal B, Deveci S, Mas N, Cinar E, Mas MR.

Division of Geriatric Medicine, Departments of Internal Medicine, Gulhane School of Medicine, GATA Geriatri BD, Ettik, Ankara 06018, Turkey.

**AIM:** To investigate the individual and combined effects of allopurinol and hyperbaric oxygen (HBO) therapy on biochemical and histopathological changes, oxidative stress, and bacterial translocation (BT) in the experimental rat acute pancreatitis (AP).

**METHODS:** Eighty-five Sprague-Dawley rats were included in the study. Fifteen of the eighty-five rats were used as controls (sham, Group I). AP was induced via intraductal taurocholate infusion in the remaining seventy rats. Rats that survived to induction of acute necrotizing pancreatitis were randomized into four groups. Group II received saline, Group III allopurinol, Group IV allopurinol plus HBO and Group V HBO alone. Serum amylase levels, oxidative stress parameters, BT and histopathologic scores were determined.

**RESULTS:** Serum amylase levels were lower in Groups III, IV and V compared to Group II (974 +/- 110, 384 +/- 40, 851 +/- 56, and 1664 +/- 234 U/L, respectively, P < 0.05, for all). Combining the two treatment options revealed significantly lower median [25-75 percentiles] histopathological scores when compared to individual administrations (13 [12.5-15] in allopurinol group, 9.5 [7-11.75] in HBO group, and 6 [4.5-7.5] in combined group, P < 0.01). Oxidative stress markers were significantly better in all treatment groups compared to the controls. Bacterial translocation into the pancreas and mesenteric lymph nodes was lower in Groups III, IV and V compared to Group II (54%, 23%, 50% vs 100% for translocation to pancreas, and 62%, 46%, 58% vs 100% for translocation to mesenteric lymph nodes, respectively, P < 0.05 for all).

**CONCLUSION:** The present study confirms the benefit of HBO and allopurinol treatment when administered separately in experimental rat AP. Combination of these treatment options appears to prevent progression of pancreatic injury parameters more effectively.

PMID: 18069760 [PubMed - in process]

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