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Antioxidant therapy for patients with chronic pancreatitis: A systematic review and meta-analysis

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Abstract

Background & aims: Chronic pancreatitis is a progressive, inflammatory disease of pancreas characterized by significant abdominal pain, malabsorption, and diabetes mellitus. Antioxidant therapy has been proposed as an effective treatment for painful chronic pancreatitis. We performed a meta-analysis of trials in which antioxidant therapy was compared with placebo in chronic pancreatitis.

Methods: We searched six databases to identify relevant trials. Results are expressed as risk ratio (RR) or standardized mean difference (SMD) with accompanying 95% confidence intervals (CI). The meta-analysis was performed with the fixed-effects model or random-effects model according to heterogeneity.

Results: Eight studies including 573 patients met the inclusion criteria. A meta-analysis of these studies revealed that the intervention of antioxidants was associated with a significant increase in patients with pain relief (RR, 2.15; 95% CI, 1.72-2.69; $P < 0.00001$), and a significant decrease in patients' need for analgesics (RR, 0.56; 95% CI, 0.40-0.78; $P = 0.0006$). For pain score, antioxidants improved pain tolerance in chronic pancreatitis patients (SMD: -0.41; 95% CI: -0.83 to -0.10; $P = 0.0005$). Additionally, antioxidants may cause some adverse reactions (RR, 4.22; 95% CI: 2.17-8.20; $P < 0.0001$).

Conclusions: Based on current evidence, oxidative stress may play an important role in the pathophysiology of chronic pancreatitis, and administration of antioxidants to patients with painful chronic pancreatitis is effective in relieving pain. Antioxidant supplements may be advocated as one medical therapy for chronic pancreatitis patients with low antioxidant capacity in their blood.

Keywords: Antioxidant; Chronic pancreatitis; Meta-analysis; Pain.

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