Commentary

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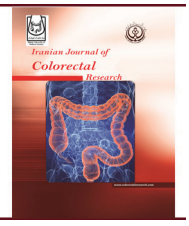

Could L-Arginine Be a Feasible Treatment for Chronic Anal Fissure?

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Anal fissure is a common benign anorectal condition characterized by a small, painful ulcer in the skin of the anal canal below the dentate line, which gradually leads to spasm of the internal sphincter muscle. This hypertonicity results in pain during defecation, bleeding, reduced blood flow, and impaired healing (1). Factors such as previous anal surgery, trauma, a low-fiber diet, obesity, hypothyroidism, and chronic constipation have been associated with chronic anal fissures (1-3). Although many patients seek surgical interventions, anal fissures can be treated with dietary modifications, warm-water baths, and conservative treatments (4). Topical calcium channel blockers, nitrates, and botulinum toxin are among the most well-known medical treatments for anal fissures (5). However, the management of anal fissures remains challenging and requires further clinical studies to develop improved treatment strategies.

L-Arginine, a semi-essential amino acid, serves as a precursor for nitric oxide production in the vascular endothelium, resulting in vasodilation. Additionally, this amino acid has been reported to reduce the myogenic tone of isolated internal anal sphincters independently of nitric oxide (6). Furthermore, L-arginine may exert anti-inflammatory effects that could aid in managing anal fissures (7). Based on these mechanisms, several studies have evaluated the effects of both topical and oral administration of L-arginine in patients with anal fissures. In a non-randomized controlled study, topical application of 400 mg L-arginine gel reduced maximum anal resting pressure by 46% after two hours compared to placebo (8). Another single-arm study demonstrated a reduction in maximum resting anal pressure, along with improved anodermal blood flow and healing in patients with fissures after 12 weeks of local L-arginine administration (9). The improvement in anodermal blood flow may be associated with L-arginine-induced nitric oxide production. The only randomized controlled trial (RCT) addressing this issue assessed the effects of one month of 3000 mg/day L-arginine supplementation in patients with chronic anal fissures. This study reported significant decreases in fissure size, bleeding, wound healing, and pain in both within-group and between-group analyses. Additionally, anal pressure was reduced following L-arginine administration compared to the control group (10). However, another study found that anorectal blood flow and anal resting pressure did not change after 15 g of arginine supplementation for seven days in healthy subjects (11). This lack of effect may be related to the short duration of supplementation or the specific impact of arginine on hypertonecity, local ischemia, or endothelial dysfunction present in fissures. No side effects were reported in these studies.

Currently, there are limited studies on the effects of L-arginine in the treatment of anal fissures, making it difficult to draw definitive conclusions. Nevertheless, the available data are promising and warrant further investigation through well-designed, long-term RCTs and mechanistic studies, particularly those comparing oral and topical treatments. It is also essential to consider potential contraindications in specific patients, such as those with certain cardiovascular conditions.

Authors' Contribution

Both authors had similar contribution to this work regarding conceptualization, methodology, validity, and writing and editing draft.

Conflicts of interest: None declared.

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