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Chronic Paronychia

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Abstract

Background: Chronic paronychia is a common inflammatory disorder characterized by erythema, edema, and tenderness involving the nail folds for at least 6 weeks. The condition is related to repeated exposure to moist environments, irritants and allergens. Secondary colonization by fungal and bacterial pathogens is thought to exacerbate the persistent inflammation. Preventive measures are crucial to help healing and reduce recurrence rates. Medical management consists mainly of anti-inflammatory treatments. In recalcitrant cases not responding to medical treatments and preventive measures various surgical modalities may be used. In this article, we aimed to review the etiopathogenesis, clinical features and management of chronic paronychia.

Introduction

Chronic paronychia is an inflammatory disorder affecting the nail fold. The condition is defined as inflammation lasting at least six weeks involving one or more of the three nail folds [1]. It is a common occupational disease, particularly prevalent in housemaids, barte nders, barbers, dishwashers, cooks, food handlers, swimmers and nurses [2]. Preventive measures are crucial to help healing and reduce recurrence rates. Medical management consists mainly of anti-inflammatory treatments. In recalcitrant cases not responding to medical treatments and preventive measures various surgical modalities may be used.

Etiology

Chronic paronychia is a contact dermatitis caused by environmental exposure to irritants and allergens. Improper treatment of acute paronychia may also lead to chronic paronychia [3].

Etiology is multifactorial including excessive moisture, contact irritants, contact allergy, food hypersensitivity, trauma and candida hypersensitivity. Contact sensitization to allergens shown by positive patch test reactions is high among patients with chronic paronychia. There is also a higher incidence of prick test reactions to Candida allergen proving that hypersensitivity to Candida is more important than Candida infection in the development of chronic paronychia [4].

In most cases, this eczematous condition m ay be secondarily colonized with bacterial and/or fungal agents [5]. Previously Candida infection was believed to be the cause of the disease as this yeast was isolated from 40 to 95% of cases. However restoration of physiologic barrier but not the Candida eradication is associated with good clinical outcomes as

Figure 1. Erythema, edema of the nail folds are seen along with some nail plate changes

Candida is only a secondary colonizer [**6**]. Apart from Candida, atypical mycobacteria, gram-negative rods and gram-negative cocci have been implicated in chronic paronychia [**7**].

Retinoids (eg, etretinate), epidermal growth factor receptor inhibitors (eg, cetuximab, gefitinib) and protease inhibitors (eg, indinavir, lamivudine) may cause chronic paronychia [**8,9,10**]. Conditions such as diabetes mellitus and immunosuppression also predispose patients to development of chronic paronychia [**7**].

Pathogenesis

Persistent inflammation involving the nail fold disrupts normal barrier function of the nail unit by causing the separation of the nail fold from the nail plate. This separation allows the entry of allergens, irritants and mi croorganisms thus perpetuating the inflammatory process. This vicious cycle leads to the loss of the cuticle and fibrosis of the proximal nail fold [**6**].

Clinical Features

Diagnosis of chronic paronychia is based on physical examination of the nail unit. The condition mainly affects adult women and is more commonly seen in the hands than in the feet. Chronic paronychia is characterized by the erythema, edema and tenderness of the nail folds (**Figure 1**). Induration and rounding off of paronychium along with loss of cuticle is observed. Episodic exacerbations may occur. Nail plate changes are commonly observed in patients with chronic paronychia. Thickening and discoloration of the nail plate, onychomadesis, Beau's lines and pitting can be present [**6,8,11**].

A clinical staging system has been proposed by Daniel et al in order to have a standardized description of chronic paronychia. According to this classification stage I presents with mild redness and swelling of the nail folds with disruption of the cuticle. In stage II disease redness and swelling of the nail f olds is pronounced. Stage III disease is characterized with loss of cuticle, some discomfort and some nail plate changes. In stage IV, symptoms of tenderness and pain are observed along with extensive nail plate changes. Stage V represents acute exacerba-tion of chronic paronychia [**12**].

Differential Diagnosis

The differential diagnosis of chronic paronychia includes squamous cell carcinoma of the nail, subungal melanoma and digital metastases of malignant tumors [**13, 14, 15, 16**]. An underlying malignancy should be suspected in cases unresponsive to conventional treatments [**6**]. Papulosquamous diseases such as psoriasis and other diseases affecting the digits may involve nail folds and mimic chronic paronychia [**8**].

Management

Management of chronic paronychia consists of general preventive measures, medical management and surgical management. Medical and surgical treatment options for chronic paronychia are summarized in (**Table 1**).

General Preventive Measures

The preventive measures are aimed at avoiding any activity that impairs the normal barrier function of the nail fold. Patients should avoid exposure to moist environments and to contact irritants such as soaps and detergents. Regular application of moisturizers and the use of rubber gloves with cotton liners are other important preventive measures minimizing irritant contact. Patients should be instructed to keep the nails short and to avoid any activity that may injure the nail unit such as manicuring and finger sucking [**6**].

Medical Management

First-line medical treatment for this conditio n is topical corticosteroids [**6**]. Antifungal agents were the mainstay of therapy in the past [**17**]. A randomized controlled study involving 45 patients with chronic paronychia compared topical methylprednisolone aceponate with oral terbinafine and itraconazole treatments. The results showed a significant difference between the number of nails improved or cured by methylprednisolone aceponate than that of nails improved or cured with systemic antifungal agents [**18**]. Systemic antifungals are usually not recommended for the treatment of chronic paronychia. However, in one study fluconazole 50mg/day was reported to be effective [**19**].

Monthly injections of triamcinolone acetonide suspension at a concentration of 2.5mg/ml can be considered in refractory cases. Short courses of systemic steroids (methylprednisone 20 mg/day) may be used in severe cases to obtain rapid relief of inflammation [**19**].

Daniel et al reported excellent therapeutic outcomes with the combined regimen of ciclopirox application twice daily for 6-12 weeks and contact-irritant avoidance [**20**].

Tacrolimus 0,1% ointment may be used for the treatment of chronic paronychia. A randomized study assigned 45 adults with chr onic paronychia to treatment with 0.1% tacrolimus ointment or 0,1% betamethasone 17-valerate cream or emollient application for 3 weeks. Both tacrolimus and betamethasone led to significantly greater improvement compared with emollient treatment and tacrolimus appeared to be more efficacious than bethametasone [**21**].

In a recent pilot study, the efficacy of neodymium-doped yttrium aluminium garnet (Nd:YAG) laser for the treatment of chronic paronychia was assessed. Two to five monthly Nd-YAG laser sessions were applied to 8 female patients with long-standing paronychia. Fluences of 70 to 80 J/cm2 and 2.5 mm spot size handpiece were utilized with 0.7 ms pulse duration. Seven of the patients showed improvement of the erythema and swelling and six of them had also improvement in nail plate abnormalities. The beneficial effects of Nd-YAG laser on chronic paronychia may be attributed to elevation of vascular permeability and thus improving vascular microcirculation [**22**].

Zinc deficiency is associated with nail plate abnormalities and chronic paronychia. 20 mg of oral supplemental zinc per day is a helpful treatment adjunct [**23**].

Surgical Management

Surgical approaches must be tried only in recalcitrant cases not responding to medical management and strict application of preventive measures [**6**].

Surgical treatment options for chron ic paronychia consist of eponychial marsupialization with or without nail plate removal,

Table 1. Medical and Surgical Treatment Options for Chronic Paronychia

Medical Management	Surgical Management
Topical steroids	Eponychial marsupialization
Intralesional steroids	En bloc resection of proximal nail fold
Systemic steroids	Swiss roll technique
Tacrolimus 0.1% ointment	Square flap technique
Topical and systemic antifungals	
Nd-YAG laser	

en bloc excision of the proximal nail fold with or without nail plate removal and the Swiss-roll technique and the square flap technique. Square flap technique is a new surgical approach allowing the removal of fibrotic tissue while preserving the epidermis of the proximal nail fold. The procedure doe s not cause nail fold retraction, thus maintaining the nail plate length [**24, 25**].

All of the surgical interventions for chronic paronychia aim at the drainage of inflamed germinal matrix [**24**]. Generally simultaneo us nail removal has been shown to be associated with better clinical results, especially when concurrent nail changes are present [**26, 27**].

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