



## Localized Cold Urticaria Mimicking Livedo in an Adult Female

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### Abstract

There are few reports of localized urticaria with symptoms similar to livedo racemosa (reticularis) in adults. Here we describe a rare case of localized cold urticaria (grade 1) on the face of a 32-year-old female. The results of an ice cube test showed a positive reaction on the affected area (her cheeks). Treatment with anti-histamine (second generation) tablets, warming and avoidance of cold exposure were the best treatments for her cold urticaria in winter.

**Keywords:** Cold urticaria; Urticaria; Livedo

### Introduction

Cold urticaria is caused by cold exposure, and localized cold urticaria in adults is rare. Cold urticaria is divided into three grades: grade 1 is localized urticaria; grade 2 is urticaria or angioedema without respiratory symptoms or hypotension; and grade 3 is severe, systemic allergic reactions (gastrointestinal, cardiovascular, respiratory symptoms or shock) [1]. Generally, cold urticaria reaches grade 2 severity. Acquired cold urticaria is predominantly shown in young adults [2]. Livedo shows a reticular cutaneous pattern, and livedo are divided to three types: cutis marmorata, livedo reticularis and livedo racemosa. Most livedo reticularis and racemosa cases are caused by disturbances of the peripheral circulation of underlying disease with pain on the legs. Cutis marmorata is developed by physiological circulation in younger people than livedo reticularis and racemosa.

Here we describe a rare case of localized cold urticaria (grade 1) similar to livedo racemosa (reticularis) on the face of an adult female. We previously reported an adult male case of localized cold urticaria [3]. This case, like our previous one, developed wheals (a reticular pattern) only in winter and without any underlying disease; in both cases, the cutaneous lesions were caused by cold environmental factors (wind, snow, rain and cold temperatures).

### Case Presentation

A 32-year-old female reported developing reticular cutaneous pattern lesions with wheal and discomfort (slightly itching) on her cheeks every winter (Figure 1). Lesions had developed on her face, and her skin condition improved when she took anti-histamine tablets, warmed herself and avoided cold exposure.

Our first diagnosis was livedo or localized cold urticaria. She had no pain, dyspnea, diarrhea, cutaneous ulcers or any wheal on any part of her body other than her face when she was exposed to cold. She had no history of any other disease (bacterial or virus infection, collagen disease, heart disease, vasculitis, rheumatoid arthritis, amyloidosis or sarcoidosis). There was no familial history of cold urticaria. Laboratory data were in the normal range. She did not have cryoglobulins or cold hemolysins. The results of an ice cube test showed a positive reaction on the affected area (her cheeks). She did not consent to a skin biopsy, but treatment with anti-histamine (second generation) tablets, warming herself and avoiding cold exposure improved her cutaneous condition. We made a final diagnosis of localized urticaria based on her symptoms.

### Discussion

Urticaria occurs in about 15-20% of the population [4], and the frequency of cold urticaria is in 2-6% of urticaria patients [5-7]. There are few reports of localized urticaria in adults. The immunologic and non-immunologic mechanisms of cold urticaria are unclear, but some chemical mediators might be involved [8,9]. The mechanisms by which chemical mediators are activated in a local area might be similar to the mechanisms of allergic contact urticaria. Specific skin antigens

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**Figure 1:** Cutaneous lesion on the patient's cheeks.

activated in a cold environment might release pro-inflammatory mast cell mediators and histamines [1,10-13]. Not only immunologic but also non-immunologic reactions could be associated with the mechanisms of localized urticaria; for instance, local vasoactive mediators could be activated by cold exposure.

Generally, acquired and generalized cold urticaria can be easily diagnosed based on the episodes. Some cases of localized cold urticaria are not as easy to diagnose because the skin lesions look like other dermatoses (insect bites, irritant dermatitis, contact urticaria, and livedo). This case presented in a pattern similar to that of reticular racemosa, making differential diagnosis important. There is a check list for cold urticaria [14] that is useful for the diagnosis of this condition.

The initial and essential treatment of localized urticaria is to warm the whole body or affected area and avoid cold exposure. The second treatment is the administration of antihistamine tablets or leukotriene antagonists. Previous data showed that up-dosing of the antihistamine is significantly more effective for reducing symptoms than administering the standard dose [15,16]. We administered antihistamine tablets at the standard dose in our two cases, but the patients developed localized urticaria nonetheless. Because their localized urticaria was not inhibited by the standard dose of antihistamine tablets, we speculated that these cases resulted from a dose deficiency of the medication or other causative factors of localized urticaria.

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