

Yellow Urticaria Secondary to Platelet Transfusion

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Introduction: Yellow urticaria (YU) is a rare variant of urticaria characterized by a transient yellow rash. It usually occurs at patients with hyperbilirubinemia. In clinic, the vasodilation and extravasation associated with urticaria facilitate the precipitation of bilirubin within the elastin fibers of the cutaneous tissue, which consequently leads to the emergence of atypical yellow papules and plaques. The occurrence of hyperbilirubinemia in cases of yellow urticaria is commonly attributed to underlying liver diseases, including infectious hepatitis, metastatic disease of the liver, liver cirrhosis due to various causes. Here, we report a case of YU secondary to platelet transfusion.

Purpose: Red and purple rashes are common, whereas yellow wheals are rarely reported. Therefore, we are supposed to keep an eye on the diagnosis of YU.

Patients and Methods: We present a case of YU secondary to platelet transfusion that responds rapidly to anti-hypersensitive and antihistamine treatment.

Results: Based on the skin lesion and histopathology result, we considered that the patient developed YU. The patient with YU responds rapidly to anti-hypersensitive and antihistamine treatments, with no adverse effects or recurrence. The prognosis of YU is with favorable outcome. It seldom turns into chronic urticaria and occurs repeatedly.

Conclusion: The exact pathogenesis of yellow urticaria remains uncertain. It has been proposed that the yellow coloration of the disease may result from the increased capillary permeability that cytokines and mediators, especially histamine, induce. Yellow hives are attributed to underlying hyperbilirubinemia with skin deposits and suggest underlying causes, particularly liver diseases. Conventional anti-hypersensitive and antihistamine treatments are effective in treating YU. Prophylactic and systematical use of antihistamine agents may prevent relapse.

Keywords: yellow urticaria, antihistamines, hyperbilirubinemia, platelet transfusion

Introduction

Urticaria is localized edema that occurs as a result of a transient increase in the vascular permeability of the mucous membrane. Hives are caused by factors such as allergens, infections, autoimmunity, and idiopathic mechanisms, and usually disappear within 24 h.¹ Yellow urticaria, however, is a unique and rare variant characterized by a yellow rash, which was originally reported by Clarke (1969).² YU is different from ordinary urticaria in that it presents with yellow-colored wheal that manifest in certain patients with hyperbilirubinemia.³ In a state of hyperbilirubinemia, urticaria appears yellow owing to the accumulation of bilirubin-rich fluid in the skin.

Case Report

A 58-year-old woman with decompensated liver cirrhosis resulting from chronic hepatitis C was admitted to the hospital complaining of "recurrent abdominal distension for more than 2 years, edema, and pain in both lower limbs for more than 2 hours". During comprehensive history-taking, the patient denied a history of allergies, previous urticaria episodes, new dietary changes, and recent herbal supplements or drug consumption. Laboratory findings included platelet level of 22 U/

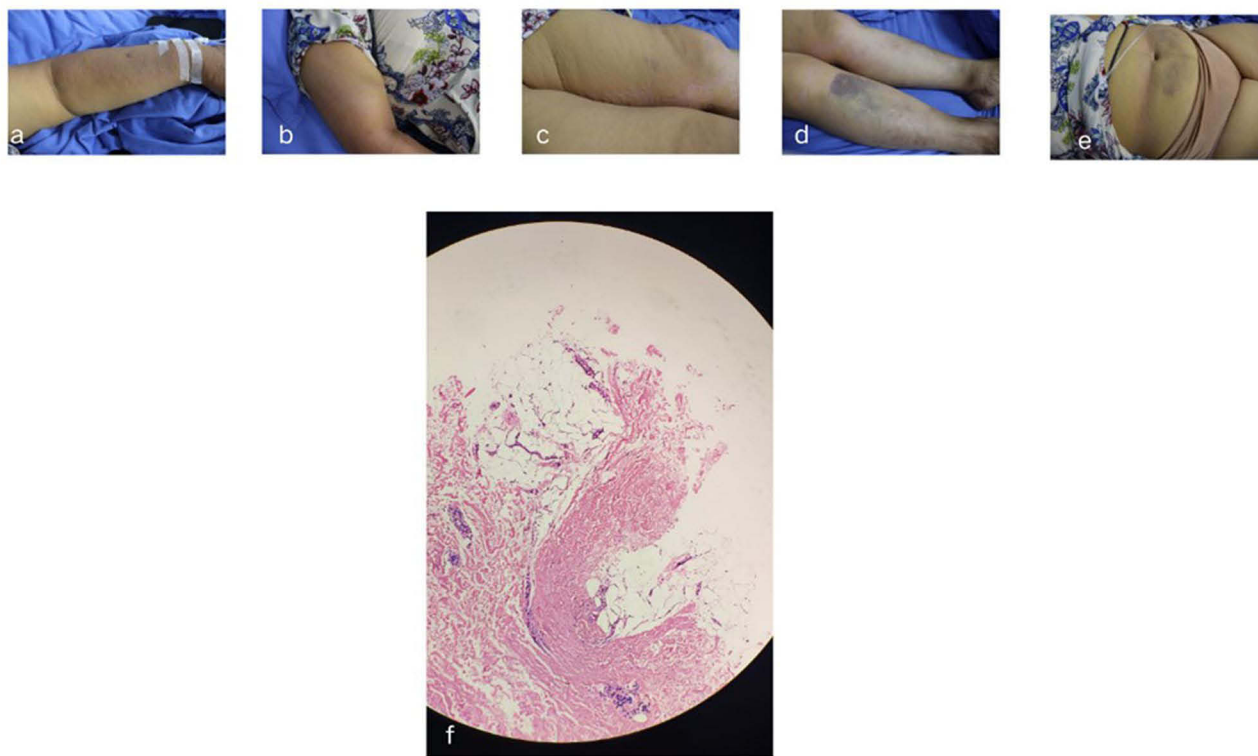


Figure 1 Well-demarcated bright yellow plaques on the forearm (a) upper arm (b) the thighs (c) lower legs (d) abdomen. (e) Histopathology showing: dermal edema and interstitial polymorphous infiltrates composed of eosinophils and sparse lymphocytes (haematoxylin-eosin stain: original magnification(f)×400).

L, within the normal reference range of 100–300 U/L, alkaline phosphatase level of 342 U/L (to convert to $\mu\text{kat/L}$, multiplied by 0.0167), within the normal reference range of 45–125 U/L, total bilirubin level of 104.2 $\mu\text{mol/L}$, within the normal reference range of 0–26 $\mu\text{mol/L}$, direct bilirubin level of 39.5 $\mu\text{mol/L}$, within the normal reference range of 0–6.8 $\mu\text{mol/L}$, indirect bilirubin level of 64.7 $\mu\text{mol/L}$, within the normal reference range of 0–18 $\mu\text{mol/L}$, alanine transaminase level of 19 U/L, within the normal reference range of 9–50 U/L, and aspartate transaminase level of 34 U/L, within the normal reference range of 15–40 U/L. She received platelet transfusion in order to modify thrombocytopenia. Thirty minutes after platelet transfusion, the patient developed a pruritic rash and an itchy throat. Physical examination revealed scleral icterus, jaundice, and well-circumscribed bright yellow plaques on the lateral abdomen and lower extremities (Figure 1a–e). Skin biopsy and histopathology revealed dermal edema and interstitial polymorphous infiltrates composed of eosinophils and sparse lymphocytes (Figure 1f), which supported the diagnosis of urticaria. The patient was administered 40 mg prednisolone once and 10 mg loratadine daily for one week, resulting in complete resolution of the lesions and itchy symptoms, and there was no recurrence in our following visit.

Discussion

In the present case, the patient denied any history of urticaria in the past. We infer that platelet transfusions triggered allergic reactions, mediating mast cell degranulation and histamine release and leading to the onset of urticaria with elevated vascular permeability, which was attributed to underlying hyperbilirubinemia with skin deposits. The yellow color may disappear after treatment but remains after the resolution of urticaria and hyperbilirubinemia because of the affinity of bilirubin for elastin.⁴ Treatment with conventional antihistamines is effective for yellow urticaria. Yellow wheals tend to be transient and are less common than red or purple skin lesions. The yellow hives suggest that the patient may suffer from underlying causes, especially liver disease. However, because it is crucial to determine the cause and determine a treatment plan, yellow skin lesions require close attention. YU can be differentiated from xanthoma planum, carotenemia, and cutaneous amyloidosis based on itching symptoms and transient rashes.

Ethical/Copyright Corrections

We thank the institution of Chengdu Pidou District Hospital of Traditional Chinese Medicine for granting us approval to publish this information. Institutional approval was required to publish the case details.

Consent Statement

Written informed consent for publication of her details was obtained from the patient.

Acknowledgments

We thank the patient for granting us permission to publish this information. The patient in this manuscript has given written informed consent to publication of her case details.

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Disclosure

The authors have no conflicts of interest to declare in this work.

References

1. Zuberbier T, Aberer W, Asero R, et al. The EAACI/GA²LEN/EDF/WAO guideline for the definition, classification, diagnosis and management of urticaria. *Allergy*. 2018;73(7):1393–1414.
2. Clarke GH. Cold urticaria. *Arch Dermatol*. 1969;100(1):121. doi:10.1001/archderm.1969.01610250127038
3. Kulthanan K, Tanwandee T, Chularojanamontri L, Panjapakul W, Saengthong-Aram P. Yellow urticaria: a systematic review. *J Asthma Allergy*. 2023;16:973–978. doi:10.2147/JAA.S424360
4. Ackerman M, Esteve E, Potier P, Finon A. Two cases of yellow urticaria revealing acute lithiasic biliary disease. *Australas J Dermatol*. 2021;62(2):e326–e327. doi:10.1111/ajd.13496

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