

Case Report

Pruritic Urticarial Papules and Plaques of Pregnancy (PUPPP)

*Papula Urtikaria Pruritik dan Plak pada Kehamilan (PUPPP)*Riyan H. Kurniawan¹, Ugi U. Dimas², Afria Arista³¹Department of Obstetrics and Gynecology
Faculty of Medicine Universitas Indonesia
Dr. Cipto Mangunkusumo General Hospital²General Practitioner³Dermatovenereologist
PELNI Hospital, Jakarta**Abstract****Objective:** To report a rare case of pruritic urticarial papules and plaques of pregnancy (PUPPP) in multiparous woman and its literature review.**Methods:** A case report with literature review.**Discussion:** This article reports a multigravida woman, presented with aterm pregnancy with sign and symptoms of pruritic urticarial papules and plaques since the first trimester of pregnancy. This case supports the morphological variation of skin lesions in PUPPP, as the patient had lesions other than the characteristic urticarial papules and plaques, with hyperpigmentation skin changes. The management of this case include oral and topical corticosteroids, oral antihistamines and moisturizer is used to relieve pruritus and skin lesions.**Conclusion:** PUPPP should be included in the differential diagnosis to differentiate this entity from other dermatoses associated with pregnancy, in order to provide appropriate treatment and reassurance.**Keywords:** papules, plaques, pregnancy, pruritic, urticarial.**Abstrak****Tujuan:** Untuk melaporkan kasus langka mengenai papula urtikaria pruritik dan plak pada kehamilan (PUPPP) perempuan multipara, membahas literatur terkait pada PUPPP.**Metode:** Laporan kasus dengan telaah literatur.**Diskusi:** Melaporkan kasus perempuan multigravida, datang dalam usia kehamilan cukup bulan dengan tanda dan gejala papula, plak, urtikaria dan pruritus sejak trimester pertama kehamilan. Kasus ini mendukung variasi morfologi lesi kulit pada PUPPP, karena pasien memiliki lesi selain papula dan plak urtikaria yang khas, dengan perubahan kulit hiperpigmentasi. Penatalaksanaan kasus ini meliputi kortikosteroid oral dan topikal, antihistamin oral dan pelembap yang digunakan untuk meredakan pruritus dan lesi kulit.**Kesimpulan:** PUPPP perlu dimasukkan dalam diagnosis banding untuk membedakan entitas ini dari penyakit kulit lain yang terkait dengan kehamilan, untuk memberikan pengobatan dan pelayanan yang tepat.**Kata kunci:** kehamilan, papula, plak, pruritus, urtikaria.**Correspondence author.** Ugi U. Dimas. Department of Obstetrics and Gynecology
PELNI Hospital Jakarta. Email: ugiutomadimas@gmail.com

Received: February, 2021 Accepted: December, 2021 Published: January, 2022

INTRODUCTIONPhysiological changes in pregnancy affects many organ systems, based on complex relation of endocrinologic, immunologic, metabolic and vascular, including dermatological changes. Some of dermatological changes give rise to skin disorder related to pregnancy.^{1,2}

Pruritic Urticarial Papules and Plaques of Pregnancy (PUPPP), also known as polymorphic eruption of pregnancy is a benign, pruritic,

inflammatory skin disorder, characterized by a polymorphous clinical presentation. PUPPP usually affects primigravida in their third trimester of pregnancy. The reported incidence of pruritic urticarial papules and plaques of pregnancy is 0.5% in single pregnancies, 2.9 to 16% in twin pregnancies and 14 to 17 % in triplet pregnancies.³⁻⁵

The cause of PUPPP remains unknown, there is association between PUPPP and significantly

increased maternal and fetal weight during the course of pregnancy, rapid abdominal distention leads to damage of the connective tissue, which then releases antigenic molecules, causing an inflammatory reaction.⁶

The primary symptom of PUPPP is pruritus. Clinical presentation constitutes intensely pruritic urticarial papules and plaques starting within adjacent to striae, sparing the periumbilical area. Later on, the lesions can spread to non-abdominal sites.⁷ Approximately half of the patients later develop polymorphic skin lesions, such as urticarial papules and plaque (49%), eczematous lesions (22%), vesicles (17%), non-urticarial erythema (6%), and targetoid lesions (6%). Systemic symptoms are usually absent.⁸

There are no specific laboratory abnormalities and only nonspecific histopathology with a perivascular lymphohistiocytic infiltrate with some edema and eosinophils in the dermis.⁴ Treatment of PUPPP is focused on the relief of pruritus. The most common agents used are antipruritic agents, skin emollients and topical corticosteroids. The maternal and fetal prognosis is unaffected.⁹ We report a rare case of multigravida woman, with a history of pruritic erythematous papules and plaques in the first trimester of pregnancy.

CASE

A 37-year-old female, (gravida 3, para 2) at 38 weeks of gestation presented with signs and symptoms of pruritic erythematous papules and plaques since the first trimester starting on the lower abdomen. The rash spread to all extremities and the trunk; however, umbilicus, palms, and soles were spared. The patient also reported that the skin lesions found on her trunk and limbs were giving her insomnia due to continuous symptomatic outbreaks, predominantly including itchiness.

Physical examination revealed generalized discrete and confluent erythematous papules and plaques with hyperpigmentation skin changes on the trunk, abdomen and extremities (figure. 1). Direct immunofluorescent studies were all negative. Due to the diversity of skin manifestations, PUPPP was diagnosed.

Initial management include, systemic corticosteroids (methylprednisolone 8 mg twice a day) topical corticosteroids (mometasone furoate 0.1% twice a day), including oral anti histamine (cetirizine 10 mg daily) and moisturizer were prescribed. The patient had a good clinical response, symptoms was relief 4 weeks after delivery. She delivered a healthy, term, baby.



Figure 1. Generalized discrete and confluent erythematous papules and plaques on the abdomen (a) and extremities. Some tiny pustules and vesicles with hyperpigmentation skin changes on upper extremities (b) lower extremities (c) and thighs (d).

DISCUSSION

The patient in this case were presented itchiness with multiple lesions on the trunk, and extremities, with hyperpigmentation skin changes since the first trimester of pregnancy. The diagnosis of PUPPP can be made clinically in based on the appearance of the rash. Concerning PUPPP onset, there is different with previous

studies, PUPPP mainly affected primigravida in the third trimester of pregnancy.⁷ Multiple pruritic erythematous papules and plaques occurred after labor.⁵ In our case affect patient with multigravida in the first trimester pregnancy. The reason for this incidence is not known but could be related to the population under study. Another reason may be under-diagnosis or under documentation.^{10,11}

This case supports the morphological

variation of skin lesions in PUPPP, as the patient had lesions other than the characteristic urticarial papules and plaques, with hyperpigmentation skin changes.¹¹ Fifty seven patients with PUPPP and revealed various types of skin lesions.⁸ Eighteen patients with the morphological variation of skin lesions in PUPPP, as six of the patients had lesions other than the characteristic urticarial papules and plaques. In addition to urticarial papules and plaques, five had additional findings, including papule vesicles (three cases), target-like lesions (one case), and eczematous lesions (one case) and, one case had papulovesicular lesions.⁷ Concerning the distribution PUPPP in this case, characteristically involved the lower abdomen, and spread to the upper and lower extremities. Abdominal involvement with sparing of the umbilical region in PUPPP is an important feature in distinguishing PUPPP from other gestational dermatoses. Involvement of all the extremities occurred in this case as this pattern is rarely reported.¹¹

The differential diagnosis of PUPPP include, pemphigoid gestation, and dermatitis. The most important diagnosis to exclude is pemphigoid gestation. As the clinical features can be overlap, histological and immunological studies are necessary to make the distinction between these two disorders. Although in pemphigoid gestation, lesions usually have an earlier onset during gestation, and often involve the umbilicus, along with positive immunofluorescence of perilesional skin.³ Dermatitis in pregnancy usually occurs in patients with a personal or family history of atopy and is characterized by pruritic dermatitis lesions mainly on flexural areas.¹¹

Our case didn't exam the histopathology. Even tough in general, histopathological findings of biopsies from skin lesion were essentially nonspecific, as previously described histological findings of PUPPP showed perivascular lymphohistiocytic infiltrate with some edema and eosinophils in the dermis.⁵

The management of this case include oral and topical corticosteroids, oral antihistamines and moisturizer is used to relieve pruritus and skin lesions. Topical corticosteroid substances such as mometasone can be regarded as safe during pregnancy, but large amounts of potent topical steroids over prolonged periods should probably be regarded similarly to systemic steroids.¹² Systemic corticosteroids, which are second line therapy may be required in this severe case. For systemic treatment during

pregnancy prednisone, prednisolone, and methylprednisolone are regarded as safer than betamethasone, dexamethasone, cortisone, and hydrocortisone.¹³ Three patients with PUPPP, all of whom were treated with autologous whole blood (AWB) injections. These cases demonstrate the usefulness and safety of AWB injections for treatment of patients with PUPPP during pregnancy and breastfeeding. The three patients were primigravida and AWB injection led to complete resolution of their symptoms, beginning within 2 days of the first injection. In our case, we didn't use AWB injections because the exact mechanism of action remains unclear, although it seems to affect immune function in experimental and clinical models.⁴ Non pharmaceutical treatments such as moisturizer, oil baths and emollients should also be considered. While this provided symptomatic relief, the skin lesions resolved completely 1–4 weeks after delivery.^{9,11}

CONCLUSION

Although PUPPP benign, discomfort skin lesions could affect the quality of life of patients during pregnancy and postnatal period. PUPPP should be included in the differential diagnosis to differentiate this entity from other dermatoses associated with pregnancy. Medicamentosa steroid and anti-pruritic agents could relief symptoms in order to provide appropriate treatment and reassurance.

REFERENCES

1. Kannambal K, Tharini GK. A Screening Study on Dermatoses in Pregnancy. *JCDR*. 2017;11 (5): 1-4.
2. Ambros - Rudolph CM. Dermatoses of pregnancy – clues to diagnosis, fetal risk and therapy. *Ann Dermatol*. 2011; 23: 265-75.
3. Chouk C, Litaïem N. Pruritic Urticarial Papules and Plaques of Pregnancy (PUPPP) In: *Stat Pearls Treasure Island (FL): Stat Pearls Publishing; 2020*. <https://www.ncbi.nlm.nih.gov/books/NBK539700/?report=classic>
4. Kim EH. Pruritic Urticarial Papules and Plaques of Pregnancy Occurring Postpartum Treated with Intramuscular Injection of Autologous Whole Blood. *Case Rep Dermatol*. 2017; 9(1): 151-6.
5. Park SY, Kim JH, Lee WS. Pruritic urticarial papules and plaques of pregnancy with unique distribution developing in postpartum period. *Ann Dermatol*. 2013; 25: 506-8.
6. Jeon IK, On HR, Oh SH, Hann SK. Three cases of pruritic urticarial papules and plaques of pregnancy (PUPPP) treated with intramuscular injection of autologous whole blood. *J Eur Acad Dermatol Venereol*. 2015; 29: 797–800.

7. Ghazeeri G, Kibbi AG, Abbas O. Pruritic urticarial papules and plaques of pregnancy: epidemiological, clinical, and histopathological study of 18 cases from Lebanon. *Int J Dermatol*. 2012;51:1047-53.
8. Sirikudta W, Silpa-archa N. Polymorphic Eruption of Pregnancy Presented with Targetoid Lesions: A Report of Two Cases. *Case Rep Dermatol* 2013; 5: 138-43.
9. Giugliano E, Cagnazzo E, Servello T, Mossuto E, Marci R, Patella A. Pruritic urticarial papules and plaques of Pregnancy. *J Obstet Gynecol*. 2012; 32: 301-2.
10. Noah S. Pruritic urticarial papules and plaques of pregnancy wholly abated with one week twice daily application of fluticasone propionate lotion: A case report and review of the literature. *Dermatol online J*. 2008; 14 (11): 4.
11. Bremmer M, Driscoll MS, Colgan R. 6 skin disorder of pregnancy: A management guide. *OBG management*. 2010; 22 (6): 24-33.
12. Giatrakou S, Rallis E, Bakalakou M. Dermatological disorders unique to pregnancy. *Attikon University Hospital*. 2009; 4:73-85.
13. Barnes TM, Greive KA. Comparative safety and efficacy of topical mometasone furoate with other topical corticosteroids. *Aus J Dermatol*. 2018; 59: e168–e74.