Acta Dermatovener (Stockholm) 63: 35–38, 1983

PRURITIC URTICARIAL PAPULES AND PLAQUES OF PREGNANCY (PUPPP)

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Abstract. Pruritic urticarial papules and plaques of pregnancy (PUPPP) has been defined as an intensely pruritic cutaneous eruption occuring in the third trimester of pregnancy. It resolves spontaneously or at parturition. We present our experience with 15 cases of this new entity.

Pruritic urticarial papules and plaques of pregnancy (PUPPP), is a benign dermatosis with no maternal or fetal risk, that should be differentiated from other dermatosis of pregnancy. The first cases of PUPPP were described by Lawley et al. (1) in 1979. Later Stoller (2), Schwartz et al. (3), Sasseville et al. (4), Uhlin (5), Ahmed & Kaplan (6) and Callen & Hanno (7), have described new cases, with a total of 30 published observations up till 1981.

According to these observations, PUPPP is characterized by:

1. Appearance in the third trimester of pregnancy.
2. Rash composed of urticariform papules and plaques.
3. Intense pruritus.
4. Lesions located on abdomen and proximal aspects of thighs.
5. Disappearance of lesions before or a few weeks post partum.
6. Absence of maternal–fetal risk.

In this paper, we present the clinico-pathologic observation of 14 additional cases of PUPPP.

MATERIAL AND METHOD

In our revision of dermatoses in pregnancies observed in the Dermatology Department of "Hospital de San Pablo de Barcelona", we have found 14 cases during the period 1975 to 1981 that meet the criteria previously mentioned for the diagnosis of PUPPP.

The clinical and obstetrical histories, the clinical course pre- and post partum, and the cutaneous lesions of these patients were reviewed. General analytical information on blood and urine was found in all of the cases. Chorionic gonadotropin (CG) levels were determined in 5 cases. Both the papule and urticariform plaque lesions were biopsied in the 14 patients. These biopsies were then fixed on Bouin medium and processed routinely, being examined with a hematoxylin-eosin stain. In 9 of the cases, using direct immunofluorescence techniques, the presence of IgG, IgA, IgM, and C_3 in the lesions was studied.

RESULTS

The frequency of PUPPP at the "Hospital de San Pablo" during 1981 was 0.38%. According to reported cases in the literature, it is the most frequent dermatosis during pregnancy, followed by herpes gestationis and pruritus of pregnancy.

Table I gives a summary of the clinical characteristics of the 14 patients affected by PUPPP.

The women's ages varied from 17 to 32 years.

The lesions appeared initially on the abdomen in all cases. These extended in 4 cases to the thorax and in 6 cases towards gluteal region and thighs.

The initial erythematosis papule lesions transformed into small plaques with a persistent urticariform appearance. Some lesions showed the obvious consequences of the intense pruritus.

The itching was categorized as very intense and/or intense in 10 cases and only moderate in 4 cases.

The lesions appeared in the third trimester in all the patients. The PUPPP began in the eighth gestational month in 8 of the pregnacies, one in the seventh month, and 5 patients were at term when the clinical findings were first noted.

The evolutionary course of the disease was benign, the median time for cure of affected patients was 3 weeks and practically all of them improved after parturition in one week or less. The cure was always post partum in our cases. Twelve cases

Table I.

Age	Degree of pruritus	Distribution	Onset of pregnancy (month)	Clearing time after delivery	Therapy*
17	Severe	Trunk, abdomen, buttocks, legs	8	1 week	Topical cs 20 mg/d
22	Intense	Trunk, abdomen	7	4 days	Baby powder
30	Intense	Trunk, abdomen	9	2 days	Topical cs
29	Intense	Abdomen	8	–	Oral cs
20	Severe	Abdomen, buttocks, legs	8	1 week	Oral cs topical cs 20 mg
26	Moderate	Abdomen	8	6 days	None
25	Moderate	Abdomen, trunk	8½	7 days	Oral cs 20 mg, antihistaminic topical cs
25	Severe	Abdomen, trunk buttocks	8½	6 days	Antihistaminic, topical cs
30	Severe	Abdomen, trunk, legs, buttocks	8	10 days	Topical cs
21	Intense	Abdomen trunk, buttocks	9	3 days	Topical cs
20	Moderate	Abdomen	8	3 days	Topical cs, antihistaminic
32	Intense	Abdomen,trunk	9	5 days	Topical cs, antihistaminic
22	Severe	Abdomen, trunk, buttocks legs	9	7 days	Topical cs antihistaminic
23	Moderate	Abdomen, trunk	9	3 days	topical cs antihistaminic

* topical cs=fluorinated corticosteroids.
oral cs=prednisone.
antihistaminic=diphenhydramine.

healed in one week, one patient required 2 weeks weeks and the other could not remember the time it took for her to heal.

The laboratory studies were normal in all cases. Hematologically, no evidence existed of any hematic dyscrasia. All urine results were negative and/or normal.

All births were normal, at term, and without complications. Patient no. 8 had a twin pregnancy. Cases 9 and 12 have not suffered from PUPPP in later pregnancies.

The therapy was varied, depending on the intensity of the pruritus. Five of the patients with very intense pruritus, 20 mg/day Prednisone received orally for 4 days, continuing with a reduced dose. The topical fluorated corticoids were of great utility in all cases. No therapy was given in 2 of the pregnancies.

The histological examination revealed two morphologically distinguishable patterns. Five patients only displayed a lymphohistocytic infiltrate around the superficial vessels of the dermis, with occasional presence of neutrophils or eosinophils, but no epidermal lesions. Eight cases revealed dermal and epidermal lesions. The epidermis revealed focal spongiosis and acanthosis, with foci of parakeratosis in 3 cases. There was a perivascular infiltrate in dermis, with similar characteristics. Significant edema existed in 6 biopsies, with preferential localization at the papillary dermis. An appreciable eosinophilic component in the dermic infiltrate was seen in 4 cases.

Two biopsies were performed in the remaining case, each of which revealed one of the two different patterns described. No evidence of fibrinoid necrosis of the vascular wall in leukocytoplasia was found in any case. No deposits of IgG, IgA, IgM, or C_3 in the lesion were found in any of the 9 cases in which direct immunogluorescence studies were performed on the skin.

DIFFERENTIAL DIAGNOSIS

Gestational dermatosis has been reviewed recently by Sasseville (4). Due to the possible repercussion on the gestation or fetus it is important to distinguish between the diverse dermatopathies associated with pregnancy. In order to establish a differential diagnosis we must consider: initiation, nature of lesions, clinical course, maternal-fetal risk, any sequelae and possible recurrences, as they appear in Table II. Bearing the former con-

Table 11.

	Onset (trimester)	Morphology	Symptoms	Histology	Laboratory	Course	Maternal, fetal risk
Papular dermatitis of pregnancy (8)	1st 2nd 3rd	Papules	Severe	Non-spec.	↑ H. G. C. ↓ Estrogen	Clears at delivery	Present (fetal)
Toxemic rash of pregnancy (9)	3rd	Papules, urticaria	Severe	Non-spec.	Non-spec.	Clears at delivery, recurs in pregnancy	Absent
Impetigo hepetiformis (10)	1st	Pustules	Mild	Psoriasiform	↑ VSG ↓ Ca^{++} ↑ W. C. C.	Systemic steroids	Present (maternal, fetal)
Prurigo annularis (11)	1st 2nd 3rd	Papules	Mild	Non-spec.	Non-spec.	May persist for years	Absent
Pruritic folliculitis of pregnancy (12)	2nd 3rd	Pustules	Mild	Folliculitis	Non-spec.	Clears at delivery	Absent
Autoimmune progesterone dermatitis (13)	1st	Acneiform	Non-pruritic	Non-spec.	↑ IgG ↑ IgM ↑ EOS	Abortions recurrent	Present (fetal)
Herpes gestationis (14)	1st 2nd 3rd	Vesicles, Urticaria, blisters	Severe	Bulla arise dermo-epiderm. junction IF.C'3+	Non-spec.	Recurrent with each pregnancy Systemic CS	Present (maternal, fetal)
Prurigo gestationis (15)	2nd 3rd	Papules	Moderate	Non-spec.	Non-spec.	Clears at delivery. May recur	Absent
Pruritus gravidarum (jauchdice of pregnancy) (16)	3rd	Escoriations	Mild, severe	Non-spec.	↑ Bilirubin direct ↑ γ-GTP	Improves with cholesteramine. Recurs in preg. Clears at delivery	Absent

cepts in mind, the differential diagnosis of the diseases associated with gestation include:

Papular dermatitis of pregnancy
Toxemic rash of pregnancy
Impetigo herpetiformis
Prurigo annularis
Pruritic folliculitis of pregnancy
Auto-immune progesterone dermatitis
Herpes gestationis
Prurigo gestationis
Pruritus gravidarum jaundice of pregnancy

As a result of this revision we now believe that PUPPP is not a new clinical entity that appears with gestation, but that it belongs to an ambiguous group of diseases that have been given new designations: prurigo gestationis, toxemic rash of pregnancy, whose clinical findings, histology, evolution and treatment are similar.

The term PUPPP includes a practical, unambiguous and correct clinical description that encompasses these three entities.

DISCUSSION

The 14 cases studied are clinically and histologically similar to those ones by other authors. No maternal–fetal mortality has been encountered. There is a case published by Uhlin (5) in which a newborn presented urticariform papules that as toxic erythema (17) that is found in diverse der- pregnancies went to term, birth was normal, and the newborns were healthy. Two of the women have gone on to give later births without complications or recurrence. None of the patients had had any previous instance of systemic or obstetrical disease. The histological findings in PUPPP are non-specific. The group of cases without epidermal

lesions present a picture similar to that described as toxin erythema (17) that is found in diverse dermatologic entities. The second group of lesions with epidermal affection showed some similarity to the morphological picture described in papular dermatitis of pregnancy (8) except for the presence, in some cases of PUPPP, of large mumbers of eosinophils in the infiltrate. No positivity exists in the immunofluorescence studied: hence we think it unnecessary. Our findings are similar to others published. We cannot compare the histopathology of PUPPP with the toxemic rash of pregnancy described by Bourne (9), as he gave no histopathological description. An epidermal non-specific pain superimposed on that observed in some cases of PUPPP has been described in the pruriginous folliculitis of pregnancy (12). The existence of folliculitis with pustule formation is more characteristic in the latter, a change not described in any of the published cases of PUPPP.

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Received April 1, 1982

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