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What residents need to know about pregnancy dermatoses

Raina Bembry, MD, and Tejesh Patel, MD, FAAD

What are the challenges with diagnosing pregnancy dermatoses?

Pregnancy dermatoses can be a puzzling and confusing topic due to changing nomenclature, misnomers, and overlap in clinical presentation and timeline. Classification has evolved over time and this group of skin conditions is currently categorized into atopic eruption of pregnancy (AEP), polymorphic eruption of pregnancy (PEP), pemphigoid gestationis (PG), and intrahepatic cholestasis of pregnancy (ICP).

It is important residents are familiar with the current and past names of these entities. Pruritic urticarial papules and plaques of pregnancy (PUPPP) is now often referred to as PEP. Entities like pruritic folliculitis of pregnancy and prurigo of pregnancy are currently categorized as AEP. Impetigo herpetiformis was previously classified as one of the pregnancy dermatoses, but is now considered a form of generalized pustular psoriasis by many. PG used to be called herpes gestationis but is not caused by the herpes virus; it is, in fact, an immunobullous disease. As mentioned, another challenge is the overlap in clinical presentation among this group of conditions. PEP, in particular, shares clinical features with both AEP and PG.

What skin changes are considered normal in pregnancy?

It is important to recognize the normal physiologic changes in the skin that occur during pregnancy to avoid unnecessary stress and testing for the pregnant patient. Striae develop in most pregnant patients. Hyperpigmentation is common, leading to new onset or worsening melasma, linea nigra, and darkening of the areolas. Women may develop hirsutism during pregnancy and telogen effluvium after. Vascular changes like spider angiomas, pyogenic granulomas, non-pitting edema, varicosities, and gingival hyperplasia often occur.[1] Nails may become

see PREGNANCY on p. 3

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DecisionDx-SCC is the **strongest independent predictor** of cutaneous squamous cell carcinoma metastasis.[1] DecisionDx-SCC assesses a patient's tumor biology to more precisely predict risk of metastasis.[1] The personalized results help to better inform treatment and management decisions and improve patient care.

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- DecisionDx-SCC now shown to identify patients likely to benefit from adjuvant radiation therapy (ART)[2]

Tumor biology matters.

LEARN MORE

1. Wysong et. al. *Derm & Ther*. 2024.
2. Moody et al. *Derm & Ther*. 2024.

CASTLE BIOSCIENCES

PREGNANCY from p. 1

brittle, hyperkeratotic, or develop transverse grooving and distal onycholysis.[1] There also may be changes in function of sweat and sebaceous glands.

How can the pregnancy dermatoses be distinguished from each other?

The timing of the eruption can help distinguish AEP from the other pregnancy dermatoses. AEP generally occurs earlier in pregnancy, often appearing in the first trimester in the form of an eczematous eruption. PEP, ICP, and PG tend to occur later in pregnancy. Of note, PG can begin after delivery.

PEP and PG can present similarly on physical exam with both urticarial and/or vesicular lesions, which may cause confusion. PEP tends to involve the striae and is periumbilical sparing, whereas PG involves the periumbilical region. The cutaneous changes of ICP are solely secondary to pruritus.

Skin biopsy and laboratory testing can be helpful if a diagnosis can't be made clinically. Direct immunofluorescence and indirect immunofluorescence are only positive in PG. AEP may have elevated serum IgE levels[1] while ICP is diagnosed by having pruritus and total serum bile levels greater than 11 µmol/L.[3]

Are there any risks to the mother and neonate?

Yes, most notably in ICP. High total serum bile levels increase the risk for premature labor, fetal distress, and fetal demise.[2] Severe cases of ICP may cause jaundice and vitamin K deficiency in the mother; this increases the risk of intrapartum and postpartum hemorrhage for both mother and neonate.[3] ICP occurs more often in multiple gestation and can recur in future pregnancies.[3]

The risk of developing an autoimmune disease is increased in mothers with PG, most notably Graves' disease.[3] There is risk for recurrence, earlier onset, and increasing severity with subsequent pregnancies. It may rarely be triggered by oral contraception pills or menses. Neonates are also at risk of prematurity and presenting small for gestational age.[1] Neonates are also at risk for transient bullous lesions due to crossing of maternal antibodies.

AEP is the first occurrence of eczema in 80% of patients and can recur in subsequent pregnancies.[1] Infants may also be at increased risk for developing atopic dermatitis.

PEP typically occurs in primigravid women.[3] There is no risk associated for the mother or fetus, and it does not usually recur in future pregnancies.

In summary, pregnancy dermatoses are an important group of skin conditions to recognize, especially given that some may carry a risk to the fetus and/or mother. DR

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Race for the Case

By Jessica Forbes Kaprive, DO

A 47-year-old African American patient with a medical history of hypertension and major depressive disorder presented with a chief complaint of rash, located on the face. She describes the rash as asymptomatic and had been enlarging over the past year, involving multiple areas of her face including the bilateral medial canthus, nasolabial sulcus, forehead, and right cheek. She has used topical hydrocortisone periodically. She denied any history of prior skin conditions, recent travel, autoimmune disease, new hygiene products, and has no relevant positive review of systems.

1. **What is the most likely diagnosis?**
2. **Describe the classic histopathologic findings of this condition.**
3. **What are common conditions that one could consider on the differential diagnosis of pink facial papules/nodules?**
4. **What is the relevant work-up for this condition?**
5. **What is the clinical course and treatment?**

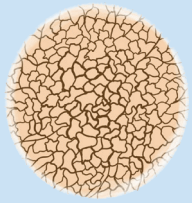
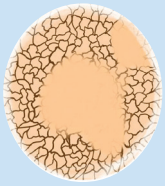
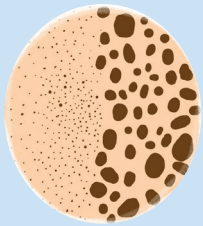
Respond with the correct answers at **www.aad.org/RaceForTheCase** for the opportunity to win a Starbucks gift card!

Race for the Case winner (Spring 2024)

The winner of the the spring 2024 Race for the Case is Chiara Rosenbaum, DO, MS, PGY-4 chief dermatology resident at Beaumont Trenton, Michigan. She correctly identified ashy dermatoses in our last case and provided the most accurate responses in the quickest time. Congrats to Dr. Rosenbaum! You can read more about this case online at **www.aad.org/race-case-answers**. If you can solve the latest case, there may be a Starbucks gift card in your future, and you may be invited to contribute your very own Race for the Case. Better get on it now!

Dermoscopic structures and their histopathological and clinical correlations

By Vixey Silva, DO, Victoria Starzyk, DO, and Mohammad Fardos, DO

Dermoscopic structure	Definition	Histopathologic findings	Clinical correlates	Image
Pigment network	Configuration of fine, interconnected brown or black lines with hypopigmented holes, reminiscent of a net, mesh, and/or honeycomb	Lines are composed of melanin or melanin-containing cells within the epidermis arranged along elongated rete ridges. The holes represent the tips of the dermal papillae and suprapapillary plate	Melanocytic nevus Dysplastic nevus Melanoma	
Pseudo-network	An area with diffuse pigmentation interspersed with non-pigmented adnexal openings on the skin's surface, resembling a pigment network	Melanin or melanin-containing cells located within the epidermis and dermo-epidermal junction that is interrupted by follicular openings	Solar lentigo Pigmented actinic keratosis Seborrheic keratosis	
Structure-less areas	Regions on the skin devoid of discernible patterns or specific structures including regression structures. These areas are at least 10% the size of the entire lesion and are usually hypopigmented when compared to the surrounding lesion	Relative flattening of the rete ridges and dermal papillae. There may also be a scattering of melanin and melanin-containing cells within the dermal layers and suprabasilar epidermal layers	Melanocytic nevus Dysplastic nevus Melanoma	
Negative pigment network	Hypopigmented serpiginous interconnecting lines interweaving throughout the lesion that surround pigmented globular structures	Thin elongated rete ridges with melanocytic nests within widened dermal papillae. This can also be a result of dermal papillae bridging	Spitz nevus Melanoma	
Dots/globules	Dots: Brown, black, gray, and/or blue small, round, or oval structures that are <0.1mm in diameter Globules: Same as dots, however, the size of globules are >0.1mm in diameter	Localized pigment accumulation in melanoma cells, melanophages, melanocytes, and keratinocytes. Color-dependent findings can suggest the location of pigment. Black structures indicate pigmentation of the stratum corneum. Brown structures indicate intra-epidermal melanin accumulation. Blue structures indicate dermal involvement	Melanocytic nevus Dysplastic nevus Melanoma	 Left: Dots Right: Globules

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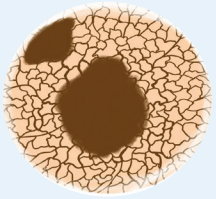
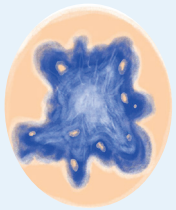
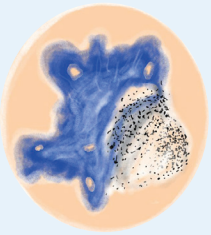
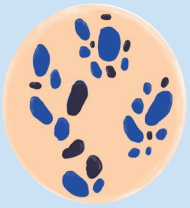
Dermoscopic structures and their histopathological and clinical correlations

By Vixey Silva, DO, Victoria Starzyk, DO, and Mohammad Fardos, DO

Dermoscopic structure	Definition	Histopathologic findings	Clinical correlates	Image
Blotches	Uniform brown to black pigmented areas that obscure underlying structures. These structures make up at least 10% of the lesion's size	Accumulation of melanin predominantly in the stratum corneum, although typically within all layers of the epidermis. Melanin may also be located within the dermis	Melanocytic nevus Dysplastic nevus Melanoma	
Crystalline structures	Shiny, reflective structures resembling crystals or glass shards on the skin's surface. These structures can only be visualized by polarized light due to its refractile elements	Although not clearly defined, speculation suggests it correlates to increased or altered collagen within the superficial dermis and/or compact orthokeratosis	Dermatofibroma Scars Basal cell carcinoma Lichen planus-like keratosis	
Blue-white veil	Structureless focal blue zone with a "ground glass" white haze overlying the lesion usually overlying a palpable area. The blue-white veil can also overlie the entire lesion	White color is composed of compact orthokeratosis with or without hypergranulosis and acanthosis The blue color is comprised of melanophages, melanocytes, or aggregates of melanin located within the dermis	Melanoma Blue nevus	
Peppering/ granularity	Multiple small, dark, usually blue-gray, dots, speckles and/or grain-like structures within a lesion	Melanophages with intracellular melanin or free extracellular particles of melanin scatter throughout the superficial dermis	Melanoma Lichen planus-like keratosis	
Regression structures	Blue-gray areas and white depigmented areas that can appear as shiny streaks under polarized light, usually seen in combination with multiple clustered blue-gray dots (peppering)	Thickened collagen within the dermis representing fibrosis, melanophages with intracellular melanin, free extracellular melanin, with or without lymphocytes	Lichen planus-like keratosis	
Blue-gray ovoid nests	Large, ovoid, or elongated blue-gray structures. These are larger than globules	Melanin deposited in pigmented basal cell carcinoma tumor nests within the dermis, DEJ, and/or superficial dermis	Basal cell carcinoma	

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The complete five-page chart, including references, is available online, at www.aad.org/boardsfodder.

More study charts online!

In addition to the full, expanded **Dermoscopic structures and their histopathological and clinical correlations** chart, you can view the new **Surgical Complications Part 1** and **Surgical Complications Part 2** charts by Rachit Gupta, MD, and Kelly Park, MD, MSL, FAAD, at **www.aad.org/boardsfodder**.

Check out the full archives at **www.aad.org/boardsfodder**.

Kim T. Nguyen, BS, is a hair loss research fellow at the University of Minnesota, under the mentorship of Maria K. Hordinsky, MD, FAAD, and Ronda S. Farah, MD, FAAD. She has completed research work in frontal fibrosing alopecia, platelet-rich plasma, pediatric alopecia areata, and non-scarring hair loss associated with nutritional deficiencies. Kim is also an MD candidate at the University of Nebraska Medical Center and will be applying for medical residency this year (2024-2025).

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More Clinical Pearls online!

Visit the archives at **www.aad.org/member/publications/more/dir/clinical-pearls**.

Clinical Pearls

Clinical Pearls will help prepare residents for the future by providing them with pearls about what they should know about a specific subject area by the time they complete their residency.

Platelet-rich plasma for alopecia

By Kim T. Nguyen, BS, and Ronda S. Farah, MD, FAAD

1. **Platelet-rich plasma (PRP) is not FDA-approved for hair growth but has been positively trending in the literature.**
Derived from one's own blood, PRP is a blood product that typically boasts a platelet concentration approximately two to five times higher than that found in whole blood.[1] Within the field of dermatology, PRP scalp injections have been gaining fast traction in the hair loss realm. Yet, PRP devices have not been cleared by the U.S. Food and Drug Administration (FDA) for alopecia. For patients who cannot tolerate or do not improve with conventional hair loss therapies, PRP can be a worthwhile therapeutic pursuit. In the literature, PRP has been shown to stimulate hair growth and hair thickness and may even reduce shedding.[2,3]

2. **The mechanism of PRP remains unclear.**
While the exact mechanism for how PRP promotes hair growth is unknown, several hypotheses have been proposed. Growth factors released from platelets are thought to induce signaling pathways which promote the growth/anagen phase of hair follicles.[4] The effects of certain growth factors, such as transforming growth factor-beta, platelet-derived growth factor, and fibroblast growth factor-7, are thought to play a role in the mechanism of PRP.[4] It has also been proposed that PRP promotes angiogenesis around the hair follicles to maximize hair growth, potentially through the release of vascular endothelial growth factor.[4] Ultimately, how these growth factors modulate the hair cycle (stimulatory vs. inhibitory) is still unclear.

3. **There are variations in preparation, centrifugation, and administration of PRP.**
To date, we lack a universally agreed-upon methodology for the preparation, centrifugation, and administration of PRP.[1] For example, platelet activation methods, devices/kits, and number of spins all vary among users.[1] In our clinic, we have found success in starting patients with a series of three PRP treatments, each spaced 1-2 months apart. Maintenance sessions every 4 weeks up to 6 months have been proposed. Our preferred frequency of PRP administration may change in the future when the optimal frequency of scalp PRP is uncovered. Overall, more robust randomized controlled trials are needed to elucidate the optimal way to maximize hair growth with PRP.

4. **Androgenetic alopecia (AGA) shows the most evidence for PRP in the literature.**
Among the hair loss/scalp conditions, AGA has the most literature supporting PRP's clinical efficacy. A recent meta-analysis in AGA patients found that PRP significantly increased the hair count, thickness, and density when compared to the placebo group.[3] Another study found that PRP significantly reduced hair pull rates when compared to topical minoxidil after 12 weeks.[2] PRP has demonstrated favorable results in scarring alopecia patients, but larger studies are needed before we can draw conclusions.[2] For scarring alopecia (e.g., frontal fibrosing alopecia, lichen planopilaris), the evidence for PRP is still at the case report and case series level.[2]

5. **Scalp PRP injections have a favorable safety profile.**
While scalp PRP is a relatively safe in-office procedure, there are some risks and adverse effects that dermatologists should keep in mind. The most common side effects of scalp PRP are immediate and self-resolve within 24 hours after the procedure. These include pain, swelling, bleeding, lightheadedness/hypotension, and erythema.[3] Of these adverse effects, pain is most commonly reported in the scalp PRP literature.[3] To reduce some of these adverse effects, dermatologists can consider implementing simple proactive measures such as vibratory devices to distract from pain or advising patients to arrive well-hydrated and after a recent meal.

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Getting down to business

Using business-focused educational resources in your residency

By Jessica Forbes Kaprive, DO

One essential aspect for dermatology residents is understanding the business side of medicine. While medical school and residency training may have provided a solid foundation in clinical skills, they often lack comprehensive education in business management. Building a foundation of business skills and aspects of becoming a dermatologist is crucial for residents who will eventually enter private practice or academic settings.

The American Academy of Dermatology (AAD) provides a wealth of resources at AAD.org that are invaluable for dermatology residents as they navigate their training and prepare for their careers. These resources can assist with preparation for the real-world workforce, but also for billing/coding questions that do frequent the dermatology core and applied exams every year. Incorporating business-focused educational components into residency programs' didactics sessions can enhance residents' understanding of the broader aspects of dermatology practice beyond clinical care.

One such resource is the Academy's Practice Management Center, which provides educational materials, webinars, and tools specifically tailored to dermatologists. Residents can also access modules covering topics like coding and billing, practice efficiency, and strategic planning. AAD.org offers many coding resources which can help residents navigate the complexities of coding dermatologic procedures. This may be something that residency didactics programs can structure into their curriculum throughout residency training. Another resource is the American Medical Association (AMA) which offers resources and tools for residents and practicing physicians, including guidance on practice management, reimbursement, and coding.

Incorporating business-focused educational components into dermatology residency programs can better prepare residents for the realities of dermatology practice. By utilizing resources offered by the AAD and other organizations, residents can gain the knowledge and skills needed to thrive in both clinical and business aspects of dermatology. The inevitable workforce demands, such as accurate and timely billing and coding, will eventually face the graduating resident. Incorporating these available resources may help allow for a smoother transition into becoming a dermatology attending. Whether it's learning about coding and billing, practice efficiency, or strategic planning, I highly encourage residents and residency programs to utilize the AAD resources in their structured curriculum to provide invaluable support for dermatology residents as they embark on their professional journey. DR

Jessica Forbes Kaprive, DO, is a PGY-3 dermatology resident at Lewisgale/VCOM dermatology in Blacksburg, Virginia.

To learn more about the Academy's practice management offerings, visit **www.aad.org/member/practice**.

Is something interesting happening in your residency program? We'd like to feature it in *Directions*.

Send your ideas to **dmonti@aad.org**.

Inside this Issue

Anisha Guda, MD, is a PGY-4 dermatology resident at UT Southwestern Medical Center and a member of the AAD Residents and Fellows Committee.

Beginning of a journey

By Anisha Guda, MD

I would like to start off by saying hello! My name is Anisha Guda and I am a dermatology resident at UT Southwestern. As the new *DermWorld* resident advisor, I want to welcome you and introduce you to the wonderful quarterly publication that is *DermWorld Directions in Residency*. The purpose of this publication is to introduce you to educational topics in the specialty, prepare you for the next stages in your career, and help you make the most of the residency experience. As the resident advisor, I would like to introduce you to interesting topics but also keep things light-hearted and give different perspectives on the residency journey. I plan to provide advice and tips to help you tackle different situations along the way. The start of a new academic year is always an exciting time, and I would like to take this journey with you.

If you're a first-year resident who is just starting dermatology residency, I welcome you to this wonderful specialty. You finally get to learn what you have been striving and working toward for so long. You have the opportunity to learn from and provide care for patients from all walks of life for a specialty you have dreamed about serving. Enjoy the year — there will be ups and downs but know that you are in this position for a reason. Embrace the triumphs and obstacles, read about your patients, ask questions, and most importantly, never forget what brought you here.

For those entering your second year, you have the opportunity to mentor and teach junior residents. This year, take the time to hone your skills and develop the confidence to manage more complex cases and perform procedures. Continue to ask questions but also use the time to identify or enhance your passions in the field. What excites you and keeps you going? How do you want to make a difference in the field? Take on leadership roles you are interested in. This is also the time for the beginning of standardized exams but don't be afraid, your training will prepare you well.

Third-year residents, where did the time fly? You're almost done with residency training and can see the finish line. Enjoy the remaining moments with your peers, take advantage of every opportunity to learn from faculty, and embrace what the future brings. By now, you have discovered or are continuing to discover what you love in the field. You're so close to living your dream — don't lose momentum at the end. Your dreams will come true very soon.

The feature in this issue focuses on pregnancy dermatoses in dermatology. Multiple factors in the body and skin can affect pregnancy. Accurate diagnosis and management is crucial, not only to alleviate symptoms, but also to estimate correctly the risk for the fetus. We hope that through this feature you will gain confidence in taking care of pregnant patients as it relates to their skin. We also hope that this will help you diagnose and, as a result, better treat pregnant patients with these disorders. DR

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