Clinical Assessment and Management of Pediatric Psoriasis

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Introduction

E.S. is a 14-year-old female with a two-week history of a new eruption involving the face and extremities. The lesions are described as silvery-white scales with generalized erythema, and there is a small amount of nail pitting. She denies pain and itching. There have been no recent changes in soaps, lotions, shampoos, cosmetics, laundry detergents, foods, or clothing, and there is no known exposure to poison ivy or other common contact allergens.

The absence of a new external exposure, the presence of silvery scale, and the finding of nail pitting make psoriasis an important diagnostic consideration. However, a safe clinical approach should not treat the appearance alone as definitive. Several papulosquamous and inflammatory conditions can resemble psoriasis, especially when the face is involved or when the eruption is new. The diagnosis should be based on the morphology, distribution, complete skin and nail examination, medical and family history, associated symptoms, and—when uncertainty remains—appropriate laboratory or histopathologic assessment.

This educational assessment discusses the likely diagnosis, differential diagnosis, clinical evaluation, pathophysiology, treatment options, comorbidity screening, and patient education. It does not replace an in-person pediatric or dermatologic examination (Osier et al., 2017).

1. Likely Diagnosis

The most likely diagnosis is psoriasis, probably early plaque psoriasis, although a guttate or overlapping pattern should be considered if the individual lesions are small and numerous.

Classic plaque psoriasis presents as sharply demarcated erythematous plaques with overlying white or silvery scale. Common sites include the scalp, elbows, knees, trunk, umbilicus, gluteal cleft, and extensor surfaces. The face may be affected in children and adolescents more often than in adults. Nail pitting is a particularly useful clue because it reflects involvement of the nail matrix and can occur with pediatric psoriasis.

The case does not provide enough detail to determine the exact psoriasis subtype. The clinician should document whether the eruption consists of large stable plaques or numerous small droplet-like papules. If the latter pattern followed sore throat or streptococcal infection, guttate psoriasis would

become more likely.

2. Differential Diagnosis

A differential diagnosis is necessary because several disorders produce erythema and scale.

Seborrheic Dermatitis

Seborrheic dermatitis often affects the scalp, eyebrows, glabella, nasolabial folds, ears, and upper trunk. The scale is usually greasy and yellow-white rather than thick and silvery. Psoriasis and seborrheic dermatitis can overlap, producing “sebopsoriasis.” Nail pitting would favor psoriasis.

Atopic Dermatitis

Atopic dermatitis is often intensely itchy and commonly involves flexural surfaces in older children. A personal or family history of atopy may be present. Acute lesions may ooze, while chronic lesions can become lichenified. The absence of itching and the silvery scale make atopic dermatitis less likely, although not impossible.

Allergic or Irritant Contact Dermatitis

Contact dermatitis typically corresponds with an exposure pattern and often causes itching, burning, vesiculation, or sharply localized inflammation. The history contains no newly identified product or plant exposure. Generalized psoriasis with nail pitting is therefore more likely.

Tinea Corporis or Tinea Faciei

Dermatophyte infection can present as annular erythematous scaly plaques with central clearing and an active edge. Tinea can be worsened or disguised by topical corticosteroids. A potassium hydroxide preparation or fungal culture may be appropriate when morphology is uncertain, especially before starting a potent steroid.

Pityriasis Rosea

Pityriasis rosea often begins with a herald patch followed by oval lesions distributed along cleavage lines on the trunk. The scale is typically a collarette, and the face and distal extremities are less characteristic in many patients.

Secondary Syphilis

Secondary syphilis can produce a generalized papulosquamous eruption, including palms and soles, and should be considered when clinically and epidemiologically appropriate. Sexual history should be obtained privately and respectfully in adolescents, without making assumptions.

Cutaneous Lupus and Dermatomyositis

Photosensitive facial lesions, systemic symptoms, weakness, oral ulcers, or other connective-tissue signs may indicate an autoimmune condition. These diagnoses are less likely from the provided description but become relevant if atypical features are present.

Pityriasis Rubra Pilaris

Pityriasis rubra pilaris may produce orange-red plaques, follicular papules, islands of sparing, and palmoplantar thickening. It is uncommon but can resemble psoriasis.

Drug Eruption

A medication history is necessary. Beta-blockers, lithium, antimalarials, withdrawal of systemic corticosteroids, and several other medicines may trigger or worsen psoriasis. Adolescents may also use prescription, over-the-counter, or complementary products that caregivers do not know about.

3. History

The two-week onset should be clarified. Questions should include:

- whether the eruption began as one plaque or many lesions;
- the first body site affected;
- progression and spread;
- preceding sore throat, fever, respiratory infection, or skin infection;
- recent trauma, sunburn, tattoos, piercings, or scratching;
- new medication or withdrawal of medication;
- family history of psoriasis or psoriatic arthritis;
- previous episodes;
- scalp flaking, genital lesions, or intertriginous rash;
- morning stiffness, swollen joints, heel pain, back pain, or sausage-like digits;
- fatigue, mood change, school absence, and bullying;
- weight change, gastrointestinal symptoms, or other systemic complaints.

The history should also assess whether the patient experiences embarrassment, avoids activities, changes clothing to hide lesions, or has difficulty sleeping. A patient may deny pain and itching yet experience significant psychosocial harm.

4. Physical Examination

A complete examination should document:

- lesion size, shape, border, thickness, and scale;
- distribution and symmetry;
- estimated body surface area;
- scalp, hairline, retroauricular areas, ears, umbilicus, gluteal cleft, genitals, palms, and soles;
- all fingernails and toenails;
- joints and entheses;
- signs of infection;
- growth, weight, body mass index, and blood pressure.

Nail findings may include pitting, onycholysis, subungual hyperkeratosis, oil-drop discoloration, and crumbling. Nail disease can support the diagnosis and may be associated with greater risk of psoriatic arthritis.

Auspitz sign refers to pinpoint bleeding after removal of scale, but deliberately scraping lesions is unnecessary and can be uncomfortable. Koebner phenomenon refers to new lesions developing at sites of trauma. Both are supportive rather than required findings.

5. Diagnostic Testing

Psoriasis is usually a clinical diagnosis. Routine laboratory testing is not needed solely to confirm typical plaque psoriasis (Price & Jackson, 2007).

Testing may be considered in specific circumstances:

- KOH preparation or fungal culture: if tinea is possible.
- Throat culture or rapid streptococcal test: if guttate psoriasis follows pharyngitis.
- Skin biopsy: if the diagnosis remains uncertain or the presentation is atypical.
- Laboratory monitoring: before and during selected systemic medicines or biologics.
- Pregnancy testing: when relevant before a teratogenic treatment, with confidential adolescent counseling.

There is no single blood test that confirms psoriasis.

6. Skin Biopsy Findings

When biopsy is required, psoriasis commonly shows:

- regular epidermal hyperplasia with elongated rete ridges;
- parakeratosis;
- reduced or absent granular layer;
- thinning over dermal papillae;
- dilated capillaries;
- neutrophils in the stratum corneum, sometimes forming Munro microabscesses;
- neutrophilic collections within the epidermis, sometimes called spongiform pustules of Kogoj.

These findings should be interpreted with the clinical presentation because histologic features can overlap with other inflammatory disorders.

7. Pathophysiology

The original explanation describes inflammation and excessive epidermal growth, which is broadly correct but incomplete. Psoriasis develops through interaction among genetic susceptibility, innate and adaptive immunity, keratinocytes, dendritic cells, T lymphocytes, cytokines, and environmental triggers.

The IL-23/Th17/IL-17 pathway is central to current understanding. Activated dendritic cells produce cytokines that support Th17 responses. IL-17, TNF, IL-22, and related signals promote keratinocyte proliferation, abnormal differentiation, antimicrobial peptide production, and recruitment of additional immune cells. The result is a self-amplifying inflammatory loop.

Normal epidermal turnover takes weeks. In psoriasis, epidermal proliferation and migration are greatly accelerated, producing incomplete maturation and scale. The erythematous color reflects inflammation and dilated superficial blood vessels.

The process is not caused by poor hygiene and is not contagious.

8. Genetics and Triggers

Psoriasis is polygenic. Family history increases risk, but no single inherited variant determines the disease. Some variants involve HLA-C and immune-regulatory pathways.

Possible triggers include:

- streptococcal infection;

- skin trauma;
- stress;
- certain medications;
- smoking exposure;
- obesity and systemic inflammation;
- climatic or seasonal change.

A trigger does not mean the patient caused the disease. Many episodes have no clearly identifiable initiating event.

9. Clinical Subtypes

Plaque Psoriasis

The most common form, characterized by stable, well-demarcated erythematous plaques with scale.

Guttate Psoriasis

Numerous small scaly papules, often appearing after streptococcal pharyngitis in children or young adults.

Inverse Psoriasis

Smooth erythematous lesions in body folds with less visible scale because of moisture.

Scalp Psoriasis

Thick or thin scaly plaques that may extend beyond the hairline.

Pustular Psoriasis

Sterile pustules that may be localized or generalized. Generalized pustular psoriasis can be life-threatening and requires urgent care.

Erythrodermic Psoriasis

Widespread erythema and scaling affecting most of the body surface. It can impair temperature regulation and fluid balance and requires urgent evaluation.

Nail Psoriasis

Pitting, separation, discoloration, thickening, and other nail changes.

10. Severity Assessment

Severity should not be determined by body surface area alone. A small amount of disease on the face, hands, feet, genitals, or nails can produce major functional and emotional impact.

Measures may include:

- body surface area;
- Physician Global Assessment;
- Psoriasis Area and Severity Index in specialist care;
- Children's Dermatology Life Quality Index;
- symptoms, sleep, school participation, and treatment burden.

The patient's own assessment should be included. A clinician may call disease "mild" while the adolescent experiences it as severe.

11. Psoriatic Arthritis

Children and adolescents with psoriasis should be screened for joint symptoms. Psoriatic arthritis may involve peripheral joints, the spine, entheses, or entire digits. Symptoms can include:

- joint swelling or pain;
- morning stiffness;
- heel pain;
- back stiffness;
- reduced movement;
- dactylitis.

Nail disease may increase suspicion. Persistent symptoms require rheumatologic evaluation. Delayed recognition can lead to joint damage.

12. Comorbidity Screening

Pediatric psoriasis is associated with comorbidities, including obesity, hypertension, dyslipidemia, insulin resistance, inflammatory bowel disease, mood disorders, and reduced quality of life. Screening should be age-appropriate and based on clinical guidance rather than ordering every possible test

automatically.

At minimum, the clinician should assess:

- growth and body mass index;
- blood pressure;
- joint symptoms;
- mood, anxiety, bullying, and social functioning;
- family history and additional metabolic risk.

Laboratory screening may be indicated according to weight, medication, family history, and national pediatric recommendations.

13. Treatment Goals

Treatment aims to:

- reduce or clear lesions;
- control inflammation;
- relieve symptoms;
- restore school, social, and physical functioning;
- minimize treatment toxicity;
- maintain long-term control;
- support the patient and family.

There is no single treatment suitable for every child. Shared decision-making should consider the distribution, severity, previous treatment, lifestyle, access, cost, and patient preference.

14. General Skin Care

Emollients can reduce scale, improve barrier function, and enhance comfort. Fragrance-free products may be preferred when sensitive skin is present.

Patients should avoid harsh scrubbing and picking scales. Gentle bathing, moisturization, and protection from skin trauma can reduce irritation. Sunburn should be avoided, although controlled ultraviolet exposure may be therapeutic under professional supervision.

The disease should not be attributed to cleanliness, diet failure, or emotional weakness.

15. Topical Corticosteroids

Topical corticosteroids are commonly used for localized psoriasis. Potency should match the body site, plaque thickness, age, and planned duration.

Lower-potency preparations are generally preferred for the face, folds, and other thin-skin areas because stronger steroids increase risk of atrophy, telangiectasia, perioral dermatitis, striae, and ocular complications near the eyes. More potent steroids may be used for limited periods on thicker plaques of the trunk or extremities under supervision.

Families need instructions regarding:

- amount to apply;
- frequency;
- site;
- duration;
- when to stop or step down;
- potential side effects.

“Use sparingly” without clear measurement can lead to undertreatment or fear.

16. Vitamin D Analogues

Calcipotriene and related vitamin D analogues reduce keratinocyte proliferation and can be used alone or with topical corticosteroids. Combination regimens may improve effectiveness and reduce continuous steroid exposure (Zhou et al., 2022).

These products can irritate the skin and require attention to total amount and body surface area. Some formulations are not suited to the face or folds. Pediatric use should follow product labeling and specialist guidance.

17. Calcineurin Inhibitors

Tacrolimus and pimecrolimus may be used off-label for facial, genital, or flexural psoriasis where long-term corticosteroid risk is greater. They do not cause skin atrophy but may produce temporary burning or stinging.

Families should receive balanced counseling regarding off-label use and expected response. These medicines are not appropriate for every lesion and should be prescribed by a knowledgeable clinician.

18. Other Topical Agents

Salicylic acid can reduce thick scale but should be used cautiously over limited areas in children because excessive absorption can cause toxicity. Coal tar and anthralin are older options that may remain useful but can stain, irritate, or be difficult to use. Tazarotene may be used selectively but can irritate and has pregnancy-related precautions.

Topical treatment burden is important. A complicated regimen that the adolescent cannot follow is not clinically effective.

19. Phototherapy

Narrowband ultraviolet B phototherapy can treat more extensive disease when topical treatment is inadequate. It avoids systemic drug exposure but requires repeated clinic visits and careful dosing to prevent burns.

Long-term cumulative ultraviolet exposure and practical issues should be considered. Home phototherapy may be an option for selected families with specialist oversight, training, and reliable equipment.

Commercial tanning beds are not a substitute because their dose and ultraviolet spectrum are not controlled for medical treatment.

20. Systemic Nonbiologic Treatment

Systemic therapy may be appropriate when disease is moderate to severe, significantly affects quality of life, involves difficult sites, or fails topical and phototherapy.

Options used in selected pediatric patients include methotrexate, cyclosporine, and other agents depending on location and guideline. Each requires specific laboratory monitoring and counseling (Menter et al., 2020).

Methotrexate

Methotrexate can reduce inflammation but requires monitoring of blood counts and liver-related parameters. It has important pregnancy and drug-interaction considerations.

Cyclosporine

Cyclosporine can act rapidly but may affect kidney function and blood pressure. It is generally used for limited durations and urgent disease control.

Retinoids

Systemic retinoids may be considered for selected forms but have significant mucocutaneous and pregnancy-related risks. Their use requires specialist management.

21. Biologic Therapy

Biologic medicines target specific immune pathways such as TNF, IL-12/23, IL-17, or IL-23. Several have pediatric approvals that vary by country and patient age.

Biologics can produce substantial improvement but require:

- infection screening;
- vaccination review;
- assessment for contraindications;
- monitoring and education;
- planning for missed doses, surgery, and illness.

They should not be selected only because they are newer. The decision should compare effectiveness, safety, route, frequency, access, and patient preferences.

22. Infection and Vaccination Considerations

Before immunosuppressive or biologic therapy, the clinician may screen for tuberculosis, hepatitis, and other infections according to the chosen medication and local policy.

Routine vaccination status should be reviewed. Live vaccines may require timing adjustments with certain immunosuppressive therapies. Families should not change or delay vaccines without consultation.

A mild infection does not always require stopping therapy, but fever or significant illness should prompt contact with the treating team.

23. Avoiding Systemic Corticosteroid Pitfalls

Systemic corticosteroids are generally avoided as routine psoriasis treatment because withdrawal can trigger severe rebound or pustular disease. There are exceptional circumstances in medicine, but indiscriminate short courses are not a preferred strategy.

A patient receiving systemic steroids for another condition should not stop abruptly without medical advice.

24. Psychosocial Care

Adolescence is a period of identity formation, peer comparison, and increasing independence. Visible facial plaques can cause embarrassment, bullying, avoidance of activities, and depression even in the absence of itching or pain.

Clinicians should ask private, age-appropriate questions about:

- school and social participation;
- body image;
- mood and anxiety;
- sleep;
- treatment burden;
- self-harm or suicidal thoughts when indicated.

Psychological or social support should be offered when needed. Support is not an implication that the disease is “all in the mind.”

25. Adherence and Shared Decision-Making

Adolescents should participate directly in treatment decisions. A parent-only discussion can reduce ownership and adherence.

The plan should match daily routine. Once-daily treatment may be more realistic than multiple complicated applications. Written instructions and photographs can clarify where each product belongs. Follow-up should identify barriers rather than label the patient noncompliant.

Cost, transport, school hours, family beliefs, and medication texture may all influence use.

26. Lifestyle and Weight

A balanced diet, physical activity, sleep, and avoidance of smoking are important for general health. Weight management may support disease control in patients with obesity, but psoriasis should not be blamed on weight.

There is no universal “psoriasis diet” proven to cure the condition. Restrictive diets can cause nutritional or emotional harm in adolescents. Dietary changes should be medically and nutritionally appropriate.

27. Complementary Products

Herbal remedies, supplements, and internet products may interact with medication or irritate the skin. “Natural” does not guarantee safety.

The clinician should ask without judgment and provide evidence-based advice. Patients may be less likely to disclose use if they expect ridicule.

28. Follow-Up

Initial follow-up depends on severity and treatment but should assess:

- diagnostic confidence;
- response;
- side effects;
- adherence barriers;
- new joint symptoms;
- quality of life;
- whether the treatment remains appropriate for the site and age.

Photographs and standardized measures can help track change. Lack of response should prompt review of diagnosis, technique, infection, and treatment intensity rather than immediate blame.

29. Red Flags

Urgent evaluation is required for:

- rapidly spreading generalized redness;
- widespread pustules;
- fever and systemic illness;

- dehydration or temperature instability;
- severe pain or suspected infection;
- new neurological or ocular symptoms related to treatment;
- suicidal thoughts or immediate psychiatric risk.

Erythrodermic and generalized pustular psoriasis can be medical emergencies.

30. Patient and Family Education

E.S. and her family should understand that:

- psoriasis is not contagious;
- it is an immune-mediated disease, not the result of poor hygiene;
- treatment controls rather than permanently cures it;
- flares can occur despite correct treatment;
- medications should be used on the correct body sites;
- joint symptoms and major mood changes should be reported;
- follow-up is important even when the skin improves.

The adolescent's privacy should be respected during history-taking and treatment planning.

Conclusion

The presentation of silvery-white scale, erythema, and nail pitting in a 14-year-old strongly suggests psoriasis, most likely plaque psoriasis unless the individual lesions are small and droplet-like. The diagnosis is usually clinical, but fungal testing, throat testing, biopsy, or other investigations may be appropriate when the morphology or history is atypical.

Psoriasis develops through a complex interaction among genetic susceptibility, immune cells, inflammatory cytokines, blood vessels, and keratinocytes. The IL-23/Th17/IL-17 pathway plays a central role. Inflammatory signals cause excessive keratinocyte proliferation, abnormal differentiation, immune-cell recruitment, and chronic plaque formation.

Psoriasis is also associated with important comorbidities. In an adolescent patient, particular attention should be given to psoriatic arthritis, obesity, metabolic risk, inflammatory bowel disease, anxiety, depression, stigma, and reduced quality of life (de Oliveira et al., 2015).

Treatment may include emollients, topical corticosteroids, vitamin D analogues, calcineurin inhibitors, phototherapy, systemic nonbiologic medication, and biologic therapy. The choice depends on disease type, severity, location, quality-of-life effects, previous treatment response, and the patient's preferences.

Finally, psoriasis cannot currently be cured permanently. Treatment seeks to suppress inflammation, improve or clear the lesions, relieve symptoms, restore quality of life, and maintain remission. E.S. and her family should receive realistic reassurance that, although the condition may recur, it can often be controlled effectively through an individualized and carefully monitored treatment plan.

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