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HIGH-YIELD PATHOLOGY

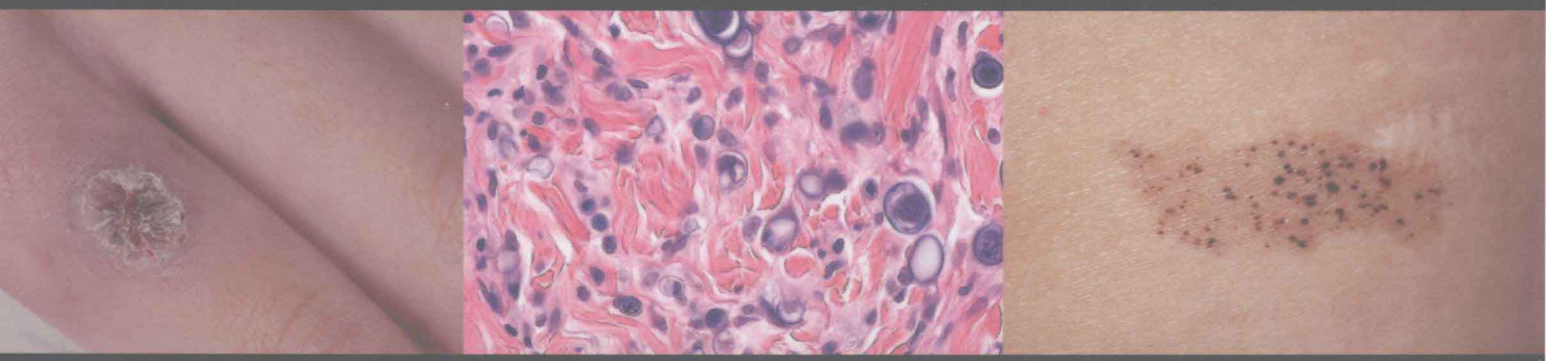
Dermatopathology

Nooshin K. Brinster

Vincent Liu

A. Hafeez Diwan

Phillip H. McKee



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HIGH-YIELD PATHOLOGY

Dermatopathology

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To my love, Derek, and our four smiling faces: Layla, Maya, Neda, and Ella. No matter what …

Nooshin Brinster

To my absolutely wonderful wife, Saba, my two children, my parents, and my three sisters.

Hafeez Diwan

To all the patients who grace us, the teachers who inspire us, the students who challenge us, and the families who fulfill us, this book is for you.

Vince Liu

To Gracie and my four children, whose lives revolve around dermatopathology!

Phillip McKee

PREFACE

High-Yield Pathology, with access to ExpertConsult.com, is a new series of pathology textbooks providing quick reference for the busy pathologist and student. We are honored to have this dermatopathology textbook as the first volume in the series.

The study of dermatopathology requires appreciation and understanding of the "gross" disease, that is, the clinical aspect of cutaneous disorders, as well as the histological findings. By integrating both pathological and clinical features, one is able to arrive at a meaningful diagnosis. With this in mind, *Dermatopathology* is organized by histological patterns, further classified by disease entity. Clinical and pathological features of each entity are presented and, where relevant, clinical photographs are provided. Several pathological photographs are included of each disease, including immunohistochemical and immunofluorescence, to illustrate the many faces and phases of each disease. Furthermore, the text is presented in a bulleted format to facilitate quick reference and learning at the microscope. We hope that it will provide valuable and practical information for general pathologists, dermatopathologists, and residents and fellows alike.

Nooshin K. Brinster, MD
Vincent Liu, MD
A. Hafeez Diwan, MD, PhD
Phillip H. McKee, MD, FRCPath

ACKNOWLEDGMENTS

Dermatopathology is a book whose creation and fulfillment would not have been possible without the unwavering leadership of Phillip McKee. His highest standards and immeasurable dedication are inspiring and matched only by his passion and sense of humor. It has been a gift to work with and learn from a master. I am also thankful to my old friend, Vince Liu, who invited me to join the project.

I am in debt to the dermatology residents and faculty of the Medical College of Virginia who have provided me with the many clinical photographs and skin biopsies that have found their way into this textbook. I have also been fortunate to have the administrative support of Jeanette MacFarland and Carol Burney, who have always been ready to help, however short the notice may have been.

I am extremely grateful to the group at Elsevier publishing, including William Schmitt, publishing director; Andrew Hall, developmental editor; Kristine Feeherty, project manager; and Steve Stave, manager of design.

The support of my family has been critical. My parents, Masoud and Vida, have championed my every endeavor, from childhood until today, with much love. I am most grateful for the love and guidance of my beloved husband, Derek, and for our dear daughters, Layla, Maya, Neda, and Ella. They have tolerated the many long hours (mostly after bedtime) spent in writing the book. I am particularly thankful that our latest addition demonstrated an uncanny sense of timing by delaying her arrival into this world until the book was complete.

Nooshin K. Brinster

A work of this kind does not happen without the help of many. First, I am grateful for all the patients I have been privileged to have known. Second, I am indebted to all those who have taught me the art and science of dermatology and dermatopathology. Third, I owe a great deal to all the medical students, residents, and fellows who have inspired my appreciation for teaching. Fourth, many thanks go to Chris Huber for her invaluable secretarial assistance. And finally, for her unflagging support through the tremendous sacrifice of this endeavor, a special thank you to Paula.

Vince Liu

I would like to thank the following colleagues and friends for their help: Jonathan Curry, Doina S. Ivan, Alexander J. Lazar, Daniel Ostler, Jose Plaza, Victor G. Prieto, Ronald P. Rapini, Carlos Torres-Cabala, Wei Lien-Wang, and Darren Whittemore. Doina Ivan was especially helpful in the preparation of the chapter on Cutaneous Metastases—she added significantly to, and vastly improved, this section. And a special thanks to Saba, Sara, and Hasan, who tolerated and supported me on many weekends and evenings when I was doing my Greta Garbo impersonation, wanting to be alone for extended periods of time to work on this book.

Hafeez Diwan

I am indebted to Bill Schmitt from Elsevier, who first thought of this concept, and to Andy Hall (also of Elsevier), whose patience and support throughout the preparation of this book have been unwavering. It has been a pleasure working on the project with Nooshin, Vince, and Hafeez, although my role has been limited to editing (sometimes quite a lot!) and photography. As always, I learn much from others. I also am extremely grateful to Eduardo Calonje, Alex Lazar, Thomas Brenn, Wayne Grayson, and Iskander Chaudhry, who continually supply me with fascinating cases to study and photographs for the various book projects that dominate my life. Finally and of greatest importance, I would never achieve anything if it were not for the patience and support of Gracie, who—in addition to being my wife, soul mate, and closest of friends—never wavers in her uphill battle of keeping me on the right path. Sometimes she finds this a Herculean task!

Phillip McKee

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The authors also thank the late NP Smith.

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E. Sebaceous Neoplasms

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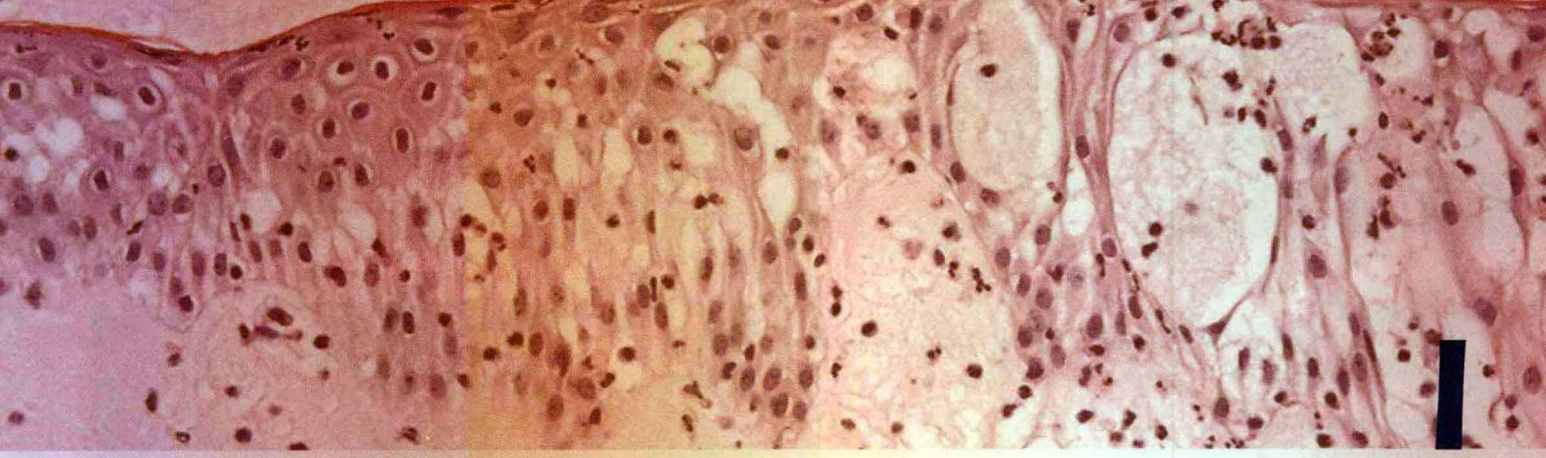
G. Fibrous, Fibrohistiocytic, and Myofibroblastic Neoplasms



1

INFLAMMATORY DERMATITIS

A. Spongiotic Dermatitis

ATOPIC DERMATITIS

Definition
- Eczematous dermatitis in individuals as manifestation of atopic diathesis

Clinical features
Epidemiology
- Affects those with atopic tendency (associated with allergic rhinitis and asthma)
- Familial predisposition
- Typically arises in infancy or childhood; delayed onset in adulthood less common

Presentation
- Eczematous reaction pattern with classically dry, scaly, pruritic patches and plaques
- Often symmetrically distributed
- Infancy: extensor involvement
- Childhood: flexural involvement of arms and legs, trunk, face (with sparing of nose—"headlight sign")
- With chronicity, lichenification and dyspigmentation occur

Prognosis and treatment
- Lifelong tendency, although many improve over time
- Risk for superinfection (impetiginization or eczema herpeticum)
- Dry skin care important part of management
- Therapeutic regimen includes topical corticosteroids, topical calcineurin-inhibitors, antihistamines, systemic immunosuppressives (e.g., methotrexate, cyclosporine), phototherapy

Pathology
Histology
- Acute: mild acanthosis, epidermal spongiosis, lymphocytic exocytosis, superficial dermal perivascular lymphohistiocytic infiltrate sometimes accompanied by eosinophils
- Subacute: parakeratosis, acanthosis, variable epidermal spongiosis, superficial dermal chronic inflammation
- Chronic: hyperkeratosis, psoriasiform epidermal hyperplasia, hypergranulosis, spongiosis less prominent or absent

Immunopathology (including immunohistochemistry)
- Not contributory

Main differential diagnoses
- Other spongiotic dermatitides including nummular eczema, contact dermatitis
- Seborrheic dermatitis
- Spongiotic drug eruption
- Dermatophytosis

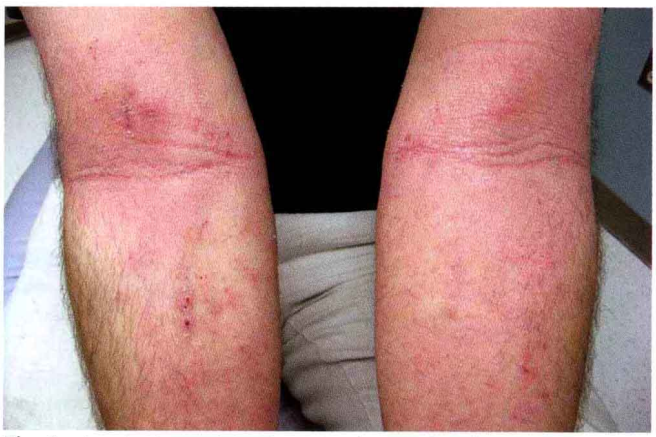


Fig 1. Atopic dermatitis. Pruritic, dry, scaly, ill-defined patches symmetrically distributed in the bilateral antecubital fossae.

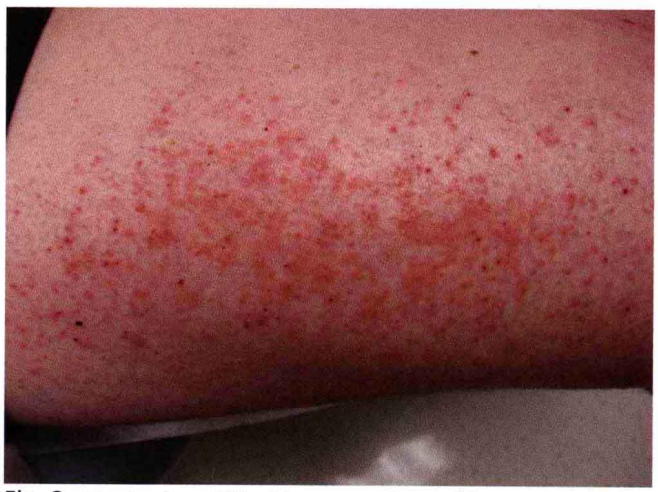


Fig 2. Atopic dermatitis. Numerous few-millimeter erythematous eczematous papules, several excoriated, over the left medial thigh.

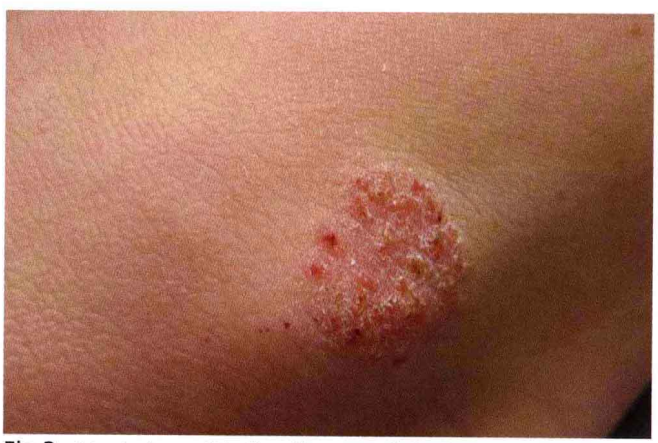


Fig 3. Atopic dermatitis. Focally crusted, fairly discrete, hyperkeratotic, pink erythematous, nummular plaque in a patient with atopic dermatitis.

Fig 4. Atopic dermatitis. There is hyperkeratosis, parakeratosis, and psoriasiform hyperplasia associated with mild spongiosis in this example of subacute atopic dermatitis.

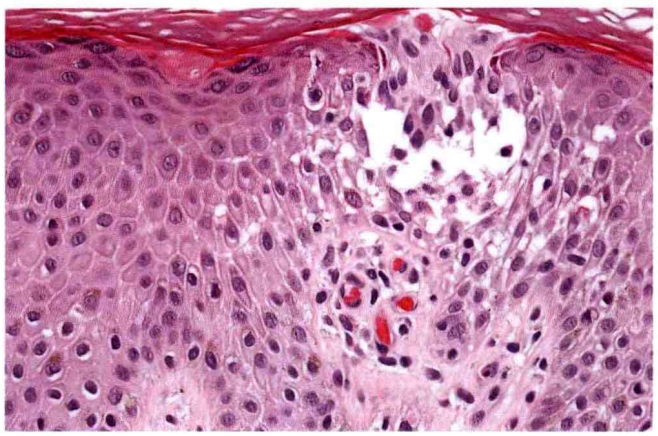


Fig 5. Atopic dermatitis. Intraepidermal Langerhans cell microgranuloma with surrounding spongiosis.

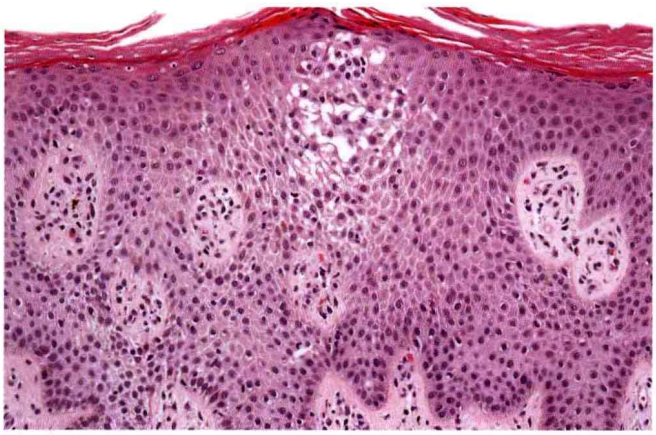


Fig 6. Atopic dermatitis. Spongiosis and lymphocytic exocytosis.

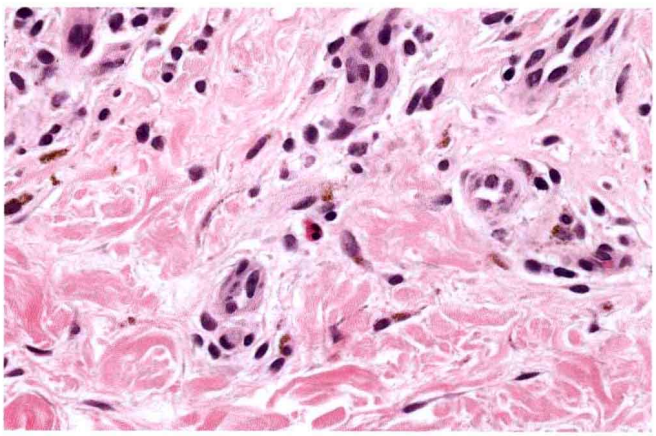


Fig 7. Atopic dermatitis. In the dermis, there is a lymphocytic infiltrate with an eosinophil and melanophages.

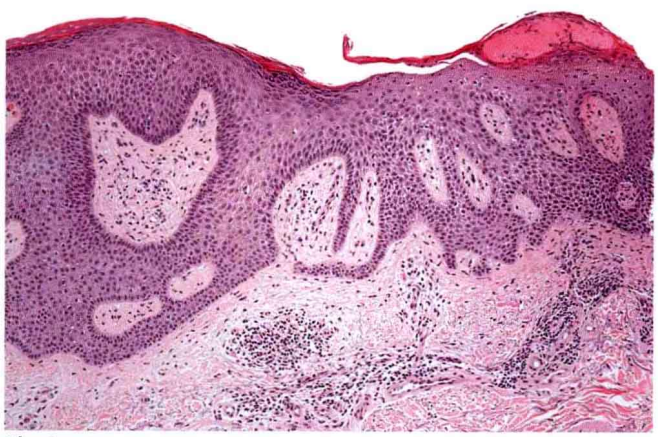


Fig 8. Chronic spongiotic dermatitis. Hyperkeratosis with crusting and acanthosis. Note the superficial perivascular chronic inflammatory cell infiltrate.

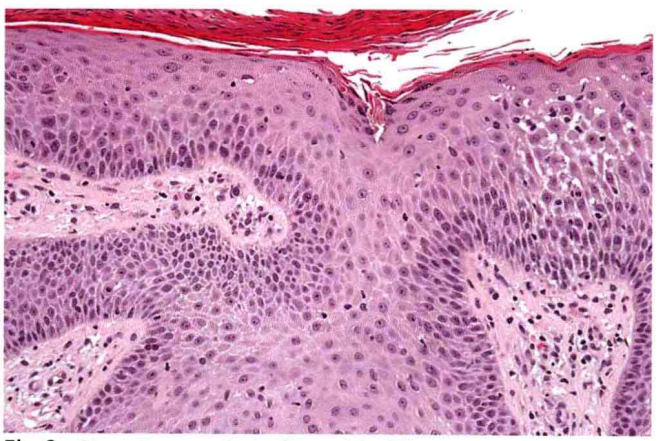


Fig 9. Chronic spongiotic dermatitis. There is parakeratosis and focal spongiosis with lymphocytic exocytosis.

SEBORRHEIC DERMATITIS

Definition
- Common papulosquamous skin condition affecting sebum-rich areas of the body

Clinical features
Epidemiology
- Predilection for whites
- May arise in infancy but more common in adults, beginning with puberty
- Can be particularly prominent in AIDS patients and patients with neurologic disorders

Presentation
- Greasy, scaling erythema in a seborrheic (sebum-rich) distribution: scalp, eyebrows, perinasal region, beard area, presternal chest, axillae, and groin
- Scalp involvement prompts patient's complaint of dandruff and pruritus
- In particularly inflammatory areas, erythematous 2- to 4-mm papules sometimes seen
- Affected areas can be pruritic or burning
- Erythroderma rare: occurs in AIDS and patients with neurologic disorders

Prognosis and treatment
- Benign process with waxing-waning course
- Topical steroids or topical calcineurin-inhibitors (e.g., tacrolimus, pimecrolimus) to calm inflammation
- Antiseborrheic shampoos (containing ingredients such as zinc pyrithione, selenium sulfide, tar preparations, keratolytics)
- Topical or, if indicated, oral, ketoconazole, or other antifungals (e.g., other azoles or allylamines)
- Certain medications may flare condition (e.g., lithium, buspirone, chlorpromazine, gold)
- Occasional superinfection can occur

Pathology
Histology
- Features of subacute spongiotic dermatitis: mildly spongiotic epidermis topped by mounded parakeratosis (often perifollicular), lymphocytic exocytosis, mild superficial perivascular infiltrate of lymphocytes, histiocytes, and scattered eosinophils
- Irregular epidermal hyperplasia
- Intracorneal neutrophilic collections (often perifollicular) may be present
- Intracorneal pityrosporum organisms sometimes found

Immunopathology
- Not contributory

Main differential diagnoses
- Other subacute spongiotic conditions
- Psoriasis

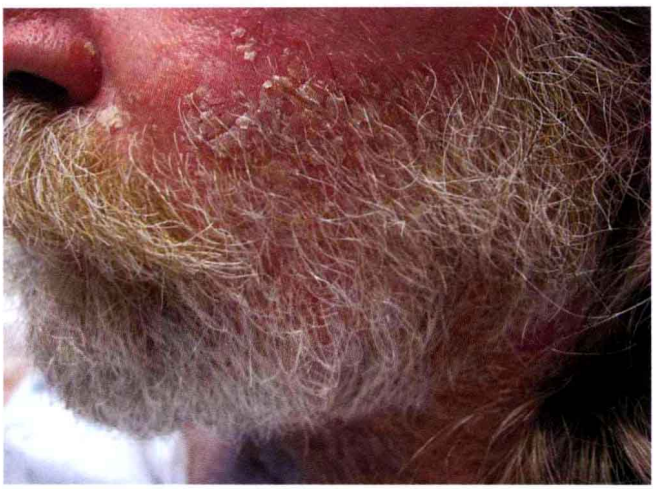


Fig 1. Seborrheic dermatitis. Erythema and marked scaling affecting the beard area.

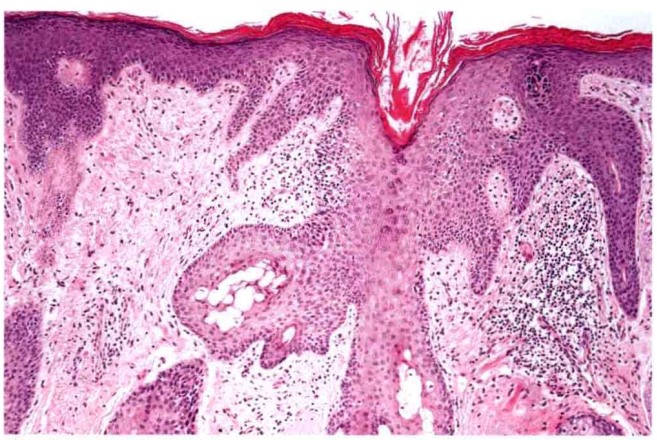


Fig 2. Seborrheic dermatitis. Hyperkeratosis with characteristic perifollicular parakeratosis. A superficial perivascular lymphohistiocytic infiltrate is present.

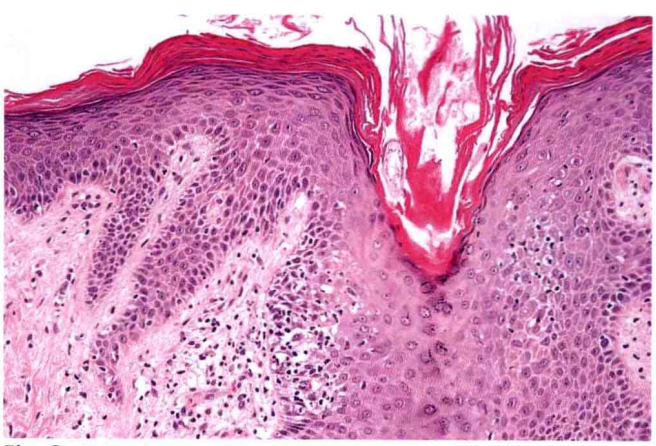


Fig 3. Seborrheic dermatitis. High-power view showing perifollicular parakeratosis, focal spongiosis, and lymphocytic exocytosis.

ALLERGIC CONTACT DERMATITIS

Definition

- Cutaneous delayed hypersensitivity reaction to exogenous antigen

Clinical features

Epidemiology

- Affects any age, either sex
- Common contactants include nickel, *Rhus* (uroshiol), fragrance, neomycin/bacitracin, formaldehyde, quaternium-15

Presentation

- Eczematous reaction pattern at areas in contact with the offending antigen, so characteristically linear or in geometric pattern
- Acutely, exposed areas may be weepy, blistering, brightly erythematous edematous papules and plaques, often with excoriation, sometimes with crusting
- With time, areas become xerotic, develop more prominent scale, and may leave postinflammatory hyper/hypopigmentation

Prognosis and treatment

- Classically self-limited over days to weeks after removal of causative agent
- Treatment with topical and systemic corticosteroids
- Immunosuppressive treatment may blunt histologic features
- Secondary impetiginization can occur, may require treatment with topical/oral antibiotics

Pathology

Histology

- *Acute*: prominent epidermal spongiosis often with vesiculation, lymphocytic exocytosis, conspicuous epidermal Langerhans cells, may form microabscesses, superficial dermal perivascular lymphohistiocytic infiltrate with eosinophils, papillary dermal edema
- *Subacute*: focal parakeratosis, epidermal spongiosis less conspicuous, mild epidermal hyperplasia, superficial dermal chronic inflammation
- *Chronic*: focal parakeratosis, psoriasiform epidermal hyperplasia, spongiosis much less prominent or absent, papillary dermal fibrosis

Immunopathology (including immunohistochemistry)

- Not contributory

Main differential diagnoses

- Other spongiotic dermatitides (e.g., seborrheic dermatitis, spongiotic drug eruption)
- Insect bite reaction
- Sézary syndrome
- Mycosis fungoides may resemble the subacute and chronic forms of dermatitis

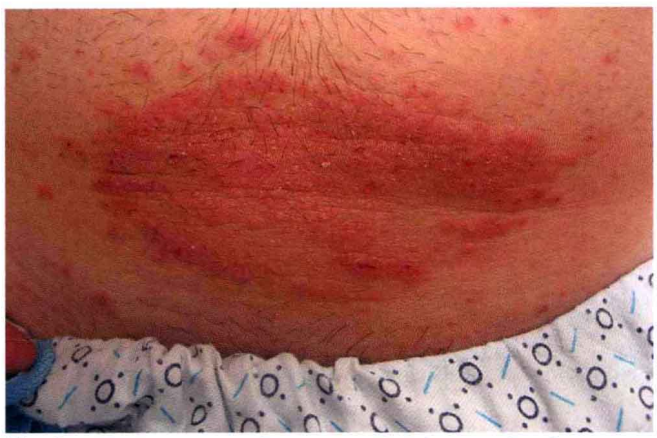


Fig 1. Allergic contact dermatitis. Florid example of an acute lesion showing diffuse vesiculation.

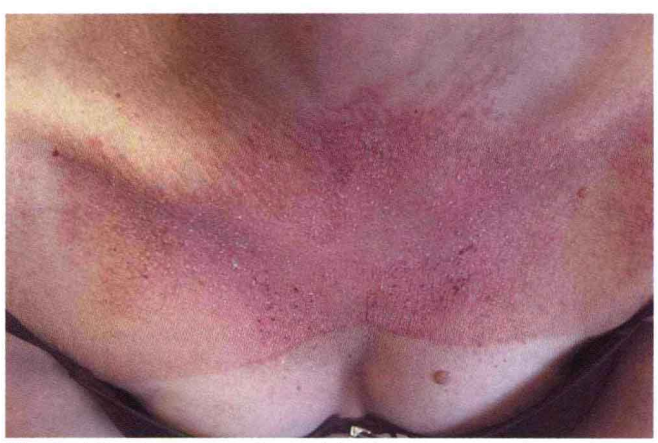


Fig 2. Allergic contact dermatitis. Eczematous scaly erythematous plaque on the chest with sharp demarcation at the inferior border, representing allergic contact dermatitis to perfume.

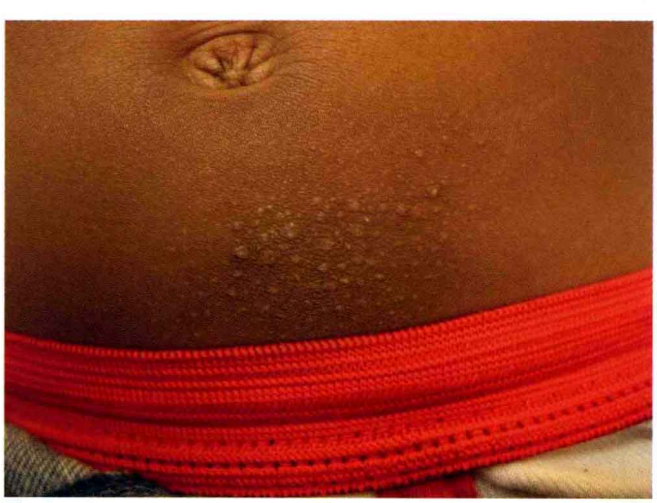


Fig 3. Allergic contact dermatitis. Fairly well-demarcated plaque formed by a coalescence of erythematous few-millimeter papules, with areas of focally crusted erosion in the infraumbilical area as a result of nickel allergy in a belt buckle.

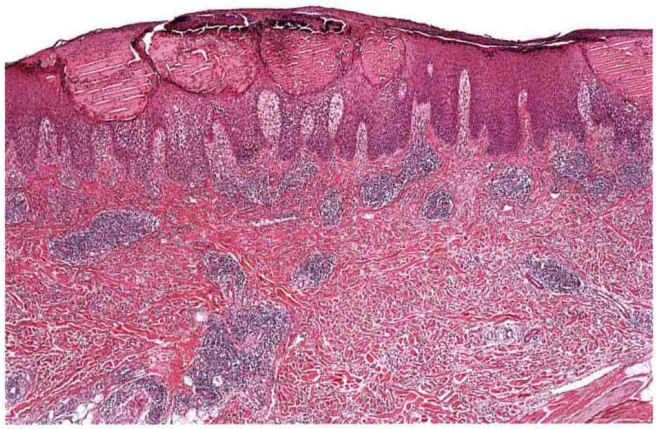


Fig 4. Allergic contact dermatitis. Crusting, psoriasiform hyperplasia, and spongiosis with vesiculation.

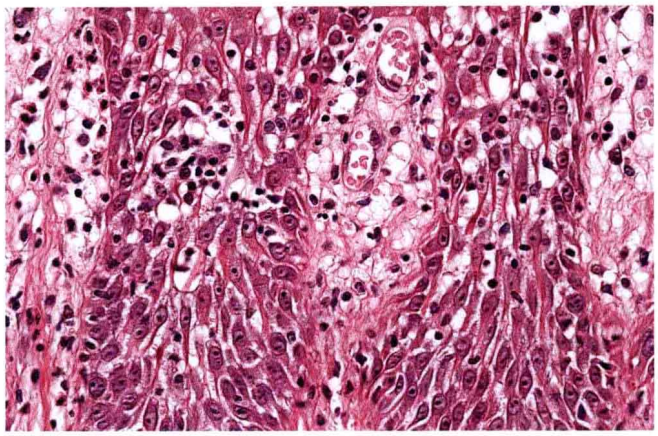


Fig 5. Allergic contact dermatitis. Spongiosis and marked lymphocytic exocytosis.

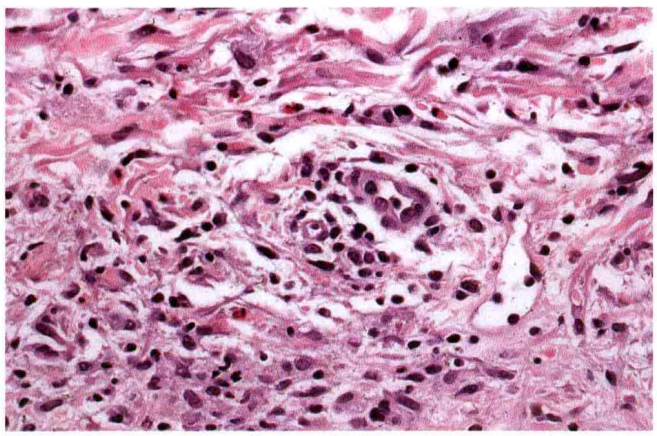


Fig 6. Allergic contact dermatitis. Dermal edema with a superficial perivascular lymphohistiocytic infiltrate. Note the eosinophils.

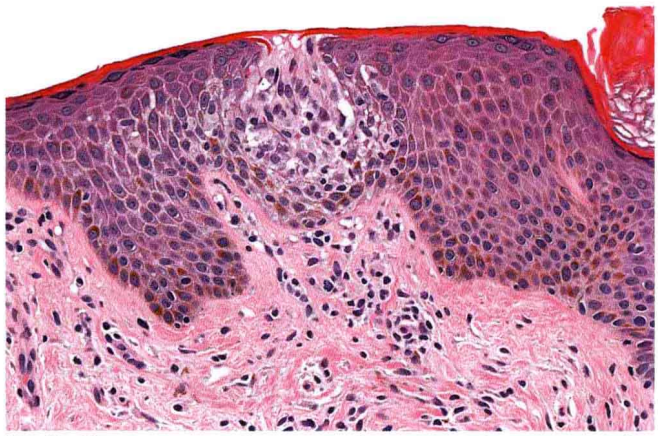


Fig 7. Allergic contact dermatitis. Conspicuous Langerhans cells.

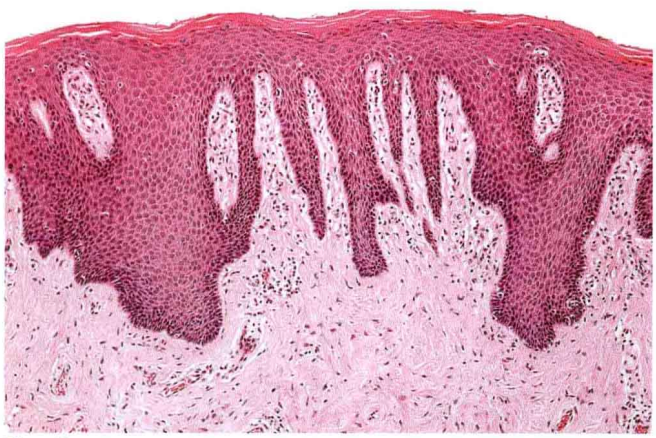


Fig 8. Allergic contact dermatitis. Chronic lesion showing hyperkeratosis, focal mild parakeratosis, psoriasiform hyperplasia, and fibrosis of the papillary dermis.

DYSHIDROTIC ECZEMA (POMPHOLYX)

Definition
- Recurrent vesicular dermatitis of the hands and feet

Clinical features
Epidemiology
- Most commonly presents in adults in the third to fifth decades of life, but children, teens, and elderly also affected
- More often seen in females
- No clear racial predilection

Presentation
- Pruritic eruption of 1- to 2-mm deep-seated, tapioca pudding–like vesicles embedded in the palms, along the finger sides, and soles
- Background variable scaling erythema
- Hyperhidrosis may be seen
- Typically lasts 2 to 4 weeks, but, not uncommonly, can experience recurrent episodes
- Longitudinal furrowing of nails sometimes occurs

Prognosis and treatment
- Topical (or intralesional or systemic) corticosteroids, topical calcineurin inhibitors, PUVA (topical soaks or with hand/foot unit) form the mainstay of therapy
- Botulinum toxin now being offered

Pathology
Histology
- Epidermal spongiosis with intraepidermal spongiotic macrovesiculation
- Superficial perivascular lymphocytic inflammation
- Occasional eosinophils

Special stains/immunopathology
- Not contributory

Main differential diagnoses
- Dermatophyte infection
- Acute contact dermatitis

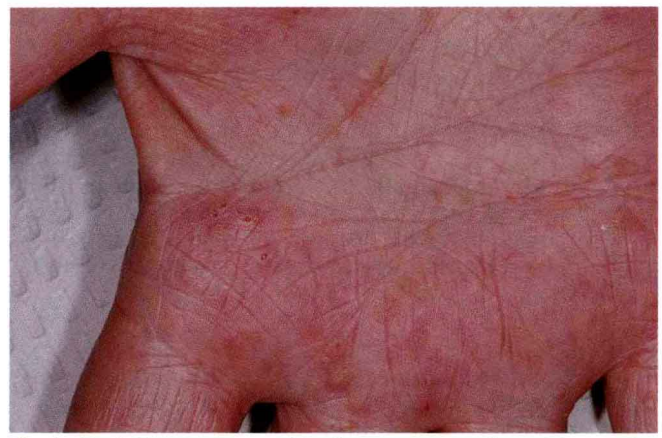


Fig 1. Dyshidrotic eczema. Erythematous papulovesicles on the palm.

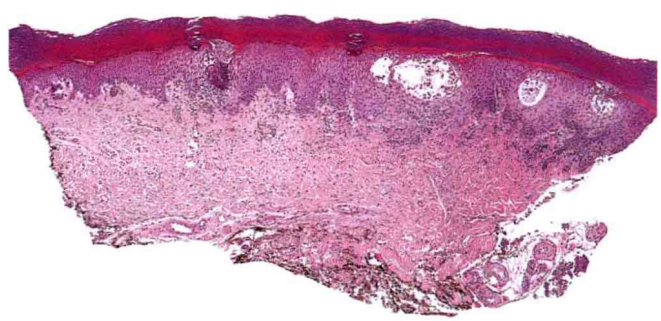


Fig 2. Dyshidrotic eczema. Scanning view showing multiple large intraepidermal vesicles.

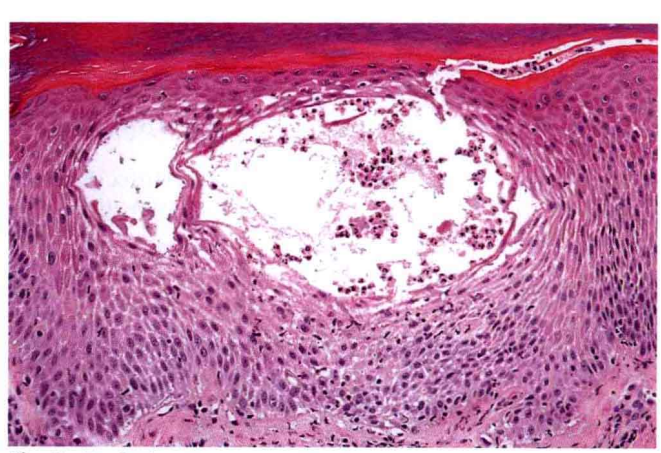


Fig 3. Dyshidrotic eczema. High-power view showing spongiotic vesicle. In view of the conspicuous neutrophils, a secondary infection should be excluded.