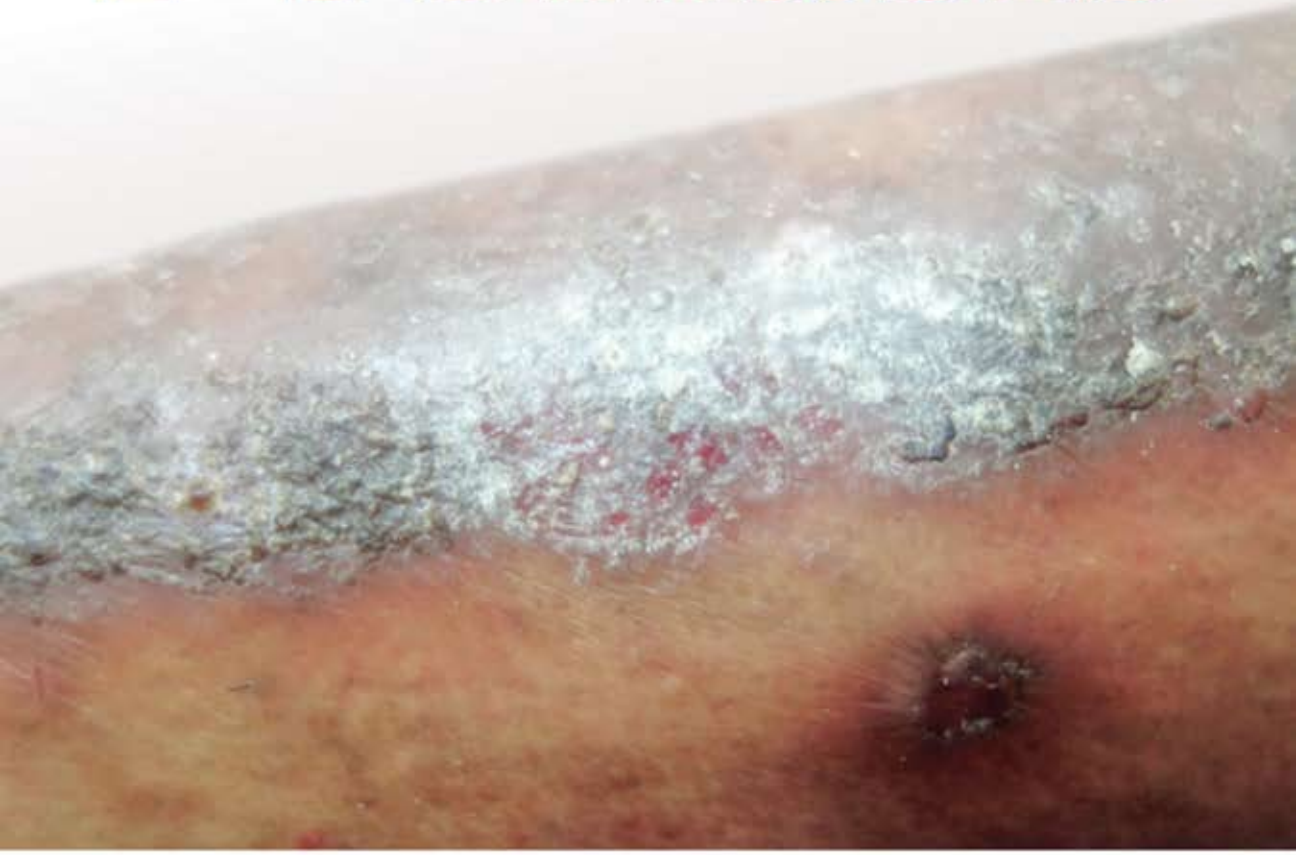
our website **www.jaypeebrothers.com,** for detailed information on dermatology books, visit our website **www.jaypeebrothers.com**

A Comprehensive Textbook of Psoriasis



Peerzada Sajad Ahmad
Iffat Hassan

JAYPEE

CONTENTS

1. **Introduction** 1
2. **Epidemiological Aspects of Psoriasis** 3
3. **Psoriasis in India** 5
4. **Genetic and Familial Factors in Psoriasis** 7
5. **Etiology and Pathogenesis** 9
6. **Histology and Pathology** 13
7. **Clinical Presentations of Psoriasis** 16
8. **Types of Psoriasis** 19
   - *Types of Psoriasis 19*
   - *Pustular Psoriasis 63*
9. **Assessing the Severity of Psoriasis** 74
   - *Salford Psoriasis Index 75*
10. **History of the Disease and Triggers** 76
11. **Effects of Psoriasis** 79
    - *Physical 79*
    - *Psoriatic Arthritis 79*
    - *Cardiovascular Disease and Metabolic Syndrome 80*
    - *Crohn's Disease 80*
    - *Malignancies 80*
12. **Metabolic Syndrome and Psoriasis** 82
13. **Psoriatic Arthritis** 86
    - *Classification 87*
    - *Laboratory Findings 90*
    - *Radiographic Studies 91*
    - *Magnetic Resonance Imaging Studies 91*
    - *Treatments 91*
    - *Other Treatments 92*
14. **Associations of Psoriasis** 95
15. **Psychiatric Comorbidity in Psoriasis** 98
16. **Childhood Psoriasis** 99
    - *Management Strategies for Childhood Psoriasis 106*
    - *Systemic Agents in Childhood Psoriasis 110*
    - *Biological Agents in Childhood Psoriasis 112*

17. Management of Psoriasis 115
- *Topical Therapy 115*
- *Vitamin D Analogues 118*

18. Systemic Therapies for Psoriasis 123
- *Treatment Rationale 123*

19. Retinoids in Psoriasis 125
- *Acitretin 126*
- *Toxicity 128*

20. Calcineurin Inhibitors in Psoriasis 130
- *Cyclosporine 131*

21. Methotrexate in Psoriasis 135
- *Dosing and Administration 135*

22. Azathioprine in Psoriasis 142
- *Contraindications 142*
- *Drug Interactions 143*

23. Fumaric Acid Esters 145
- *Evidence of Efficacy and Safety 145*
- *Contraindications 146*
- *Side Effects 146*
- *Monitoring of Patients on Fumarates 146*

24. Hydroxyurea in Psoriasis 148
- *Evidence of Efficacy 148*
- *Side Effects 148*
- *Contraindications 149*
- *Monitoring 149*

25. Leflunomide in Psoriasis 150
- *Evidence of Efficacy and Safety 150*
- *Adverse Effects 150*
- *Contraindications 150*
- *Monitoring 151*

26. Mycophenolate Mofetil in Psoriasis 152
- *Evidence of Efficacy and Safety 152*
- *Contraindications 152*
- *Side Effects 153*

27. Sulfasalazine in Psoriasis 154
- *Evidence of Efficacy and Safety 154*
- *Side Effects 154*
- *Contraindications 154*
- *Monitoring 155*

28. Tacrolimus in Psoriasis 156
- *Evidence of Efficacy 156*
- *Side Effects 156*

- *Contraindications 156*
- *Monitoring of Patients on Tacrolimus 156*

29. 6-Thioguanine in Psoriasis 158
- *Evidence of Efficacy 158*
- *Side Effects 158*
- *Contraindications to the Use of 6-Thioguanine 158*
- *Drug Interactions 158*
- *How To Monitor Patients on 6-Thioguanine 159*

30. Retinoic Acid Metabolism Blocking Agents in Psoriasis 160

31. Rapamycin Inhibitors: Sirolimus, Everolimus 161

32. Thiazolidinediones in Psoriasis 162

33. Paclitaxel in Psoriasis 163

34. Neovastat in Psoriasis 164

35. The Strength of Recommendations for the Treatment of Psoriasis Using Traditional Systemic Therapies 165
- *What do You Mean by Level of Evidence of a Study? 165*
- *What are the Grades of Recommendation? 166*

36. Investigational Therapies in Psoriasis 167
- *Janus Kinase Inhibitors 167*
- *Immunotherapy 167*
- *Tyrosine Kinase Inhibitors 168*
- *Phosphodiesterases 168*
- *Chemokine Receptor Blockers 168*
- *Peptide-T in Psoriasis 168*
- *P38 Mitogen-activated Protein Kinase Inhibitor 169*
- *Protein Kinase C Inhibitors 169*
- *Nerve Growth Factor Receptor Blocker 169*

37. Phototherapy in Psoriasis 171
- *Photochemotherapy 174*
- *Puvasol 174*

38. Recent Advances in Phototherapy 179

39. Narrowband Ultraviolet B Phototherapy in the Treatment of Psoriasis 181
- *Mechanism of Action of NB-UVB 181*
- *Indications of NBUVB 183*
- *Contraindications of NB-UVB in Psoriasis 184*
- *Protocol 184*
- *Instructions to the Patients 184*
- *Factors Affecting the Efficacy of NBUVB 184*
- *Dosage 185*
- *Side Effects and Complications of NB-UVB Phototherapy 187*
- *NB-UVB vs BB-UVB in Psoriasis 187*

- *NB-UVB vs PUVA in Psoriasis 189*
- *Combination Regimens with NB-UVB 189*
- *Pretreatment Emollient Application 191*
- *Recent Developments 192*

40. Targeted Phototherapy in Psoriasis 195
- *Why do We Need Targeted Phototherapy? 195*
- *Mechanism of Action 196*
- *Different Types of Targeted Phototherapies 197*

41. Biological Agents for Psoriasis 201
- *Classification 201*
- *Alefacept 203*
- *Efalizumab 204*
- *Etanercept 205*
- *Infliximab 206*
- *Adalimumab 206*
- *Brodalumab, Secukinumab 207*
- *Ustekinumab 207*
- *Golimumab and Certolizumab Pegol 207*
- *Other Biological Agents 207*

42. Ambulatory Treatment (Day Care) for Psoriasis 210

43. Indications for Hospitalization in Psoriasis 211
- *Adjunctive Therapies for Psoriasis 211*
- *Indications of Referral to a Dermatologist in Case of Psoriasis 212*

44. Counselling and Patient Education in Psoriasis 213

45. Complimentary Therapies for Psoriasis 214
- *Ichthyotherapy in Psoriasis 215*
- *Hydrotherapy (Water Therapy) 215*
- *Herbal Remedies 215*
- *Homeopathic Remedies 216*
- *Mind/Body Therapies 216*
- *Physical Therapies 216*

46. Diet and Nutrition in Psoriasis 217

Suggested Readings 221

Psoriasis at a Glance 223

Index 227

Chapter

4 Genetic and Familial Factors in Psoriasis

The role of genetic factors in psoriasis has been provided by various genome-wide association studies,and is now well recognised. Various genetic studies have shown that psoriasis is more common in the first and second degree relatives of psoriasis patients than in the general population. It has been estimated that an approximately 30% of patients with psoriasis vulgaris have an affected first degree relative. The risk is higher in monozygotic twins, as shown by various concordance studies. Psoriasis vulgaris is known to be associated with certain HLA antigens (HLA-Cw6 allele mostly) and complement factors but most of the studies published are in western populations with only little information about Indians. Chablani et al. in a study of 67 psoriasis subjects from Western India found an association with HLA A1, B17 and Cw6, but not with B13 antigens. Pitchappan et al. reported association of HLA Bw57 and DR7 with psoriasis vulgaris in South India. Rani et al. showed that Cw FNx010602 was the main allele that had high frequency in psoriasis patients in North India.[1,2]

HLA-Cw6 is strongly linked with the age of onset of psoriasis. In one series, HLA-cw6 was expressed in 90% of psoriasis patients with early-onset psoriasis, in 50% of those with late-onset psoriasis and only in 7% of a control population.

Psoriatic arthritis is now believed to be a distinct disorder rather than an association/complication with psoriasis, although the two disorders share certain HLA alleles. The association of psoriasis and psoriatic arthritis (PsA) with alleles in the MHC region has been recognised for over three decades and currently there are a number of association studies for both these disorders with HLA alleles. For instance class I antigens HLA-B13, HLA-B17 and its split HLA-B57 and HLA-Cw6 have consistently shown a positive association with psoriasis across various population studies. The presence of HLA Cw 0602 is associated with more severe and early-onset psoriasis and is found in 100% of patients with guttate psoriasis. Meanwhile, HLA-Cw*0602 is increased among those with psoriatic arthritis (PsA) and is also associated with an earlier age of onset of psoriasis. HLA-B27, HLA-B38 and HLA-B39 have also consistently been noted to have an increased frequency in psoriatic arthritis (PsA) cases compared with controls. With respect to disease expression, HLA-B27 is associated with back involvement, while HLA-B38 and HLA-B39 occurs more frequently among patients with peripheral polyarthritis.[3]

With the advent of genome-wide association studies, the genetic basis of psoriasis has become more evident. In order to elucidate the genetic determinants, the researchers have now shifted the focus, at regions outside the MHC region. Single nucleotide polymorphism technology and genotyping, have greatly contributed to the genetic pathogenesis of psoriasis.[4]

Genetic predisposition has a significant role in the etiopathogenesis of psoriasis as familial clustering of the cases has been observed. Familial incidence is greater in childhood psoriasis

JAYPEE BROTHERS

compared to adult-onset psoriasis follow-up. Farber and Nall reported familial occurrence in 36% of their patients, with a high concordance rate among monozygotic twins. A two- to three-fold increased risk of psoriasis was noted in monozygotic twins compared to the dizygotic twins,implying that genetic factors are important. The distribution of lesions, severity and the age of onset were similar in the monozygotic twins compared to the dizygotic twins in whom these features differed.[5]

Indian studies report lower familial incidence of the disease. Bedi reported positive family history of psoriasis in 14% of their patients whereas Kaur et al. reported family history in only 2% of their patients. First-degree relatives were affected in 84% of the cases whereas second-degree relatives were affected in 12% of cases. There are only few studies which have made a record of family history of psoriasis in their patients, so definite statistical data on familial incidence is not available.[6]

Thus, there is a clear genetic contribution to psoriasis and psoriatic arthritis (PsA). Although there are distinct genetic differences between these two disorders, but epidemiological and immunological evidence suggests that some genetic determinants are likely to be shared between these two diseases. With the strong genetic contribution to psoriasis and psoriatic arthritis (PsA), coupled with rapidly advancing linkage and association studies, elucidation of the major genetic determinants of these diseases will be possible in near future.[7]

Points to Remember

- Genetic predisposition has a significant role in the etiopathogenesis of psoriasis and familial clustering of the cases has been observed
- There is a clear genetic contribution to psoriasis and psoriatic arthritis (PsA). Indian studies report lower familial incidence of the disease
- The presence of HLA-Cw*0602 is associated with more severe and early-onset psoriasis and has been found in approximately 100% of patients with guttate psoriasis
- Psoriasis is a chronic, immune-mediated disorder that results from a polygenic predisposition combined with environmental triggers, e.g. trauma, infections and medication.

REFERENCES

1. Elder JT, Nair RP, Guo SW, Henseler T, Christophers E, Voorhees JJ. The genetics of psoriasis. Arch Dermatol. 1994;130:216-24.
2. Ameen M, Barker JN. Genetics. Psoriasis. In: Gordon KB, Ruderman EM, editors. Psoriasis and Psoriatic arthritis, 1st edn. New York: Springer; 2005.pp.3-12.
3. Bowcock AM, Cookson WO. The genetics of psoriasis, psoriatic arthritis and atopic dermatitis. Hum Mol Genet. 2004;13:R43-55.
4. Christophers E, Henseler T. Psoriasis type I and type II as subtypes of nonpustular psoriasis. In: Roenigk H, Maibach H, eds. Psoriasis. New York: Marcel Dekker; 1990.pp.15-21.
5. Elder JT, Nair RP, Henseler T, Jenisch S, Stuart P, Chia N, et al. The genetics of psoriasis 2001: the odyssey continues. Arch Dermatol. 2001;137:1447-54.
6. Kaur I, Kumar B, Sharma VK. Epidemiology of psoriasis in a clinic from North India. Indian J Dermatol Venereol Leprol. 1986;52:208-12.
7. Kreuger JG, Bowcock A. Psoriasis pathophysiology: current concepts of pathogenesis. Ann Rheum Dis. 2005;64(suppl II):ii30-6.

JAYPEE BROTHERS

for detailed information on dermatology books, visit our website **www.jaypeebrothers.com,** for detailed information on dermatol

A Comprehensive Textbook of Psoriasis

Salient Features

- Divided into 46 chapters with emphasis on almost all the aspects of psoriasis to make the textbook comprehensive
- Written in a simple and lucid language for easy reading and interpretation
- Incorporates newer therapies and recent burning issues in psoriasis, such as metabolic syndrome, psychological morbidity, childhood psoriasis, biologicals in psoriasis and nonpharmacological treatments in psoriasis
- Provides 'important points to remember' as well as the section 'psoriasis at a glance' for ready reckoning and to make it more comprehensive
- Contains several color photographs for visual memory of various types of psoriasis
- Discusses the established and newer principles and practice of treatment
- Useful for medical students, general practitioners and residents in dermatology and internal medicine.



Peerzada Sajad Ahmad MBBS MD has done his MBBS from Government Medical College, Srinagar, Jammu and Kashmir, India, in 2008, and MD in Dermatology, STD and Leprosy in 2013 from Government Medical College, Srinagar. He has recently done fellowship in Pediatric Dermatology from All India Institute of Medical Sciences, New Delhi, India. He is presently working as Senior Resident in Postgraduate Department of Dermatology, Sexually Transmitted Disease (STD) and Leprosy, Government Medical College, Srinagar. He is the co-author of *Clinical Synopsis and Color Atlas of Skin Tumors* by Jaypee Brothers. He has to his credit more than 25 publications in various national and international journals. He has presented papers in national and international conferences. He has a special interest in skin cancers, pediatric dermatoses and psoriasis.



Iffat Hassan MD is working as Professor and Head, Department of Dermatology, Sexually Transmitted Disease (STD) and Leprosy, Government Medical College, Srinagar, Jammu and Kashmir, India. She has done her undergraduation from Government Medical College, Srinagar, and postgraduation in Dermatology, Venereology and Leprology in the year 1996 from the Postgraduate Institute of Medical Education and Research, Chandigarh, India. She has more than 185 research publications to her credit, published in standard indexed national and international journals. She is on the editorial board of several journals like Indian Journal of Dermatology, Venereology and Leprology, Indian Journal of Sexually Transmitted Diseases and AIDS, Indian Journal of Pediatric Dermatology, Pigment International, Our Dermatology Online Journal and Kashmir Medical Journal and is also a reviewer of various journals like Indian Journal of Dermatology, Venereology and Leprology, Indian Journal of Dermatology, Indian Journal of Pediatric Dermatology, Indian Dermatology Online Journal, Indian Journal of Sexually Transmitted Diseases and AIDS, Pigment International and Our Dermatology Online Journal. She has received Professor K Siddappa gold medal for original research paper at the 25th National Conference of Indian Association of Dermatologists, Venereologists and Leprologists held at Guwahati, Assam, India, in the year 1997. She was also awarded the Young Scientists Award for the year 2000 by the Jammu and Kashmir State Council for Science and Technology. She was awarded the Howard Maibach Travel Award for her award paper presentation at the American Contact Dermatitis Society held at Denver Colorado, USA in March 2014. She is one of the founder members for the Pigmentary Disorders Society of India and was a task force member of the Special Interest Group of Dermatology Nursing and the Special Interest Group of Pediatric Genodermatosis of the Indian Association of Dermatologists, Venereologists and Leprologists (IADVL). She is a member of the IADVL Academy since 2015. She was also a Central Scientific Committee member of DERMACON 2015 held in Mangaluru in February 2015. She has presented several research papers in various international and national conferences and has chaired sessions in various conferences and taken part in panel discussions. She is a recognized postgraduate teacher and examiner of the University of Kashmir and has guided several postgraduate students. She has also been an external examiner for MD examination in several universities outside the state. She was Scientific Chairperson of ACSICON 2009 held in Srinagar in 2009 and was Organizing Secretary of 6th CODFICON held in Srinagar in 2014. She is also author of a textbook entitled *Clinical Synopsis and Color Atlas of Skin Tumors* published by Jaypee Brothers and has also written book chapters in several textbooks.

Available at all medical bookstores or buy online at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
www.jaypeebrothers.com

Join us on facebook.com/JaypeeMedicalPublishers

Shelving Recommendation
DERMATOLOGY

ISBN 978-93-85999-82-6