Volume 10 Monograph 32, September 2005

Sarcoidosis

Edited by **M. Drent and U. Costabel**

EUROPEAN RESPIRATORY

Sarcoidosis

European Respiratory Monograph 32 September 2005

Editor in Chief E.F.M. Wouters

This book is one in a series of European Respiratory Monographs. Each individual issue provides a comprehensive overview of one specific clinical area of respiratory health, communicating information about the most advanced techniques and systems needed to investigate it. It provides factual and useful scientific detail, drawing on specific case studies and looking into the diagnosis and management of individual patients. Previously published titles in this series are listed at the back of this book with details of how they can be purchased.

Sarcoidosis

Edited by M. Drent U. Costabel



Published by European Respiratory Society Journals Ltd ©2005 September 2005 Hardback ISBN: 1-904097-37-5 Paperback ISBN: 1-904097-41-3 ISSN: 1025-448x Printed by The Charlesworth Group, Wakefield, UK

Business matters (enquiries, advertisement bookings) should be addressed to: European Respiratory Society Journals Ltd, Publications Office, Suite 2.4, Hutton's Building, 146 West Street, Sheffield, S1 4ES, UK. Fax: 44 114 2780501.

All material is copyright to European Respiratory Society Journals Ltd. It may not be reproduced in any way including electronic means without the express permission of the company.

Statements in the volume reflect the views of the authors, and not necessarily those of the European Respiratory Society, editors or publishers.

Number 32		September 2005
CONTENTS		
	The Guest Editors	vii
	Preface	viii
	Introduction	ix
1.	Definition and history of sarcoidosis O.P. Sharma	1
2.	Epidemiology of Sarcoidosis M. Thomeer, M. Demedts, W. Wuyts	13
3.	Actiologies of sarcoidosis L.S. Newman	23
4.	Immunology and pathophysiology G. Semenzato, M. Bortoli, E. Brunetta, C. Agostini	49
5.	Genetics R.M. du Bois, P.A. Beirne, S.E. Anevlavis	64
6.	Pathology V. Poletti, G. Casoni, M. Chilosi	82
7.	Fatigue, quality of life and health status in sarcoidosis J. De Vries, R.M. Wirnsberger	92
8.	Pulmonary sarcoidosis J.P. Lynch 3rd, E.S. White	105
9.	Cardiac involvement in sarcoidosis W. Schulte, D. Kirsten, M. Drent, U. Costabel	130
10.	Skin manifestation in sarcoidosis A. Eklund, G. Rizzato	150
11.	Neurosarcoidosis E. Hoitsma, O.P. Sharma	164
12.	Clinical aspects of ocular sarcoidosis K. Ohara, M.A. Judson, R.P. Baughman	188
13.	Sarcoidosis: joint, muscle and bone involvement T.L.Th.A. Jansen, P.P.M.M. Geusens	210

14.	Renal sarcoidosis and hypercalcaemia O.P. Sharma	220
15.	Rare manifestations of sarcoidosis D.R. Moller	233
16.	Sarcoidosis in children A. Clement, R. Epaud, B. Fauroux	251
17.	Diagnostic approach to sarcoidosis U. Costabel, J. Guzman, M. Drent	259
18.	Sarcoidosis: imaging features J.A. Verschakelen	265
19.	Clinical usefulness of nuclear imaging techniques in sarcoidosis J. Mañá, M. Van Kroonenburgh	284
20.	Therapy for sarcoidosis R.P. Baughman, E.E. Lower	301
21.	Rehabilitation programmes in sarcoidosis: a multidisciplinary approach M.A. Spruit, E.F.M. Wouters, R. Gosselink	316
22.	Transplantation for sarcoidosis I. Saleem, S.O. Beirne, J.J. Egan	327
23.	History of the WASOG and current activities G. Rizzato	335
24.	Sarcoidosis patient groups P.Y. Polite	337
	Appendix: Websites of national and international sarcoidosis patient societies	340

Previously published in the European Respiratory Monograph Series:

Lung Function Testing, Monograph 31 Edited by R. Gosselink, H. Stam (2005)

Imaging, Monograph 30 *Edited by A. Bankier, P.A. Gevenosis (2004)*

Surgery for Non-Neoplastic Disorders of the Chest: a Clinical Update, Monograph 29 Edited by G.M. Verleden, D. Van Raemdonck, T. Lerut, M. Demedts (2004)

Antibiotics and the Lung, Monograph 28 Edited by M. Cazzola, F. Blasi, S. Ewig (2004)

Pulmonary Vascular Pathology: A Clinical Update, Monograph 27

Edited by M. Demedts, M. Delcroix, R. Verhaeghe, G.M. Verleden (2004)

Lung Transplantation, Monograph 26 *Edited by J Boe, M Estenne, W Weder (2003)*

Respiratory Diseases in Women, Monograph 25 *Edited by C Mapp, S Buist (2003)*

Nutrition and Metabolism in Respiratory Disease, Monograph 24 Edited by J Boe, M Estenne, W Weder (2003)

Asthma, Monograph 23 Edited by F Chung, L M Fabbri (2003)

Pleural Diseases, Monograph 22 Edited by R Loddenkemper, V B Antony (2002)

The Impact of Air Pollution on Respiratory Health, Monograph 21 *Edited by G D'Amato, S T Holgate (2002)*

ARDS, Monograph 20 Edited by T W Evans, M J D Griffiths, B F Keogh (2002)

Growing up with Lung Disease: The Lung in Transition to Adult Life, Monograph 19 *Edited by A Bush, K-H Carlsen, M S Zach* (2002)

The Nose and Lung Diseases, Monograph 18 *Edited by B Wallaërt, P Chanex, P Godard (2001)* Lung Cancer, Monograph 17 Edited by S G Spiro (2001)

Noninvasive Mechanical Ventilation, Monograph 16 Edited by J-F Muir, N Ambrosino, A K Simonds (2001)

Interstitial Lung Diseases, Monograph 14 *Edited by D Olivieri, R M du Bois (2000)*

Pulmonary Rehabilitation, Monograph 13 Edited by C F Donner, M Decramer (2000)

Respiratory Mechanics, Monograph 12 *Edited by J Milic-Emili (1999)*

Occupational Lung Disorders, Monograph 11 *Edited by C E Mapp (1999)*

Respiratory Disorders During Sleep, Monograph 10 *Edited by W T McNicholas (1998)*

Pulmonary Endoscopy, Monograph 9 *Edited by J Strausz (1998)*

Mechanical Ventilation from Intensive Care to Home Care, Monograph 8 Edited by C Roussos (1998)

Management of COPD, Monograph 7 *Edited by D S Postma, N M Siafakas (1998)*

Clinical Exercise Testing, Monograph 6 Edited by J Roca, B J Whipp (1997)

New Diagnostic Techniques in Paediatric Respiratory Medicine, Monograph 5 *Edited by M Zach, K H Carlsen, J O Warner, F H Sennhauser (1997)*

Tuberculosis, Monograph 4 *Edited by R Wilson (1997)*

Pneumonia, Monograph 3, 1997 *Edited by A Torres, M Woodhead (1997)*

Carcinoma of the Lung, Monograph 1 *Edited by S G Spiro (1995)*

Monographs may be purchased from:

Publications Sales Department, Maney Publishing, Hudson Road, Leeds LS9 7DL, UK. Tel: 44 (0)113 2497481; Fax: 44 (0)113 2486983; E-mail: books@maney.co.uk
Customers in the Americas should contact: Old City Publishing Inc., 628 North 2nd Street, Philadelphia PA 19123, USA. Tel: 1 215 925 4390; Fax: 1 215 925 4371; E-mail: info@oldcitypublishing.com

Preface

A wide range of acute and chronic pulmonary disorders are capable of diffusely affecting the lung parenchyma with variable amounts of inflammation and fibrosis. A variety of agents and clinical conditions have been associated with interstitial lung disorders. Sarcoidosis is one of the most common causes of idiopathic interstitial lung disease. Clinical presentation can range from asymptomatic to severe respiratory symptoms.

Sarcoidosis is considered as a multisystemic disease and chest physicians are frequently involved in the evaluation and management of this disease. The treatment of sarcoidosis ranges from nothing to complex immunosuppressive agents. Given the range of effective therapies for sarcoidosis, appropriate treatment is important.

This issue of the *European Respiratory Monograph* provides the reader with the current status of our understanding of sarcoidosis. Different aspects of the multisystem involvement of this disease condition are discussed by experts in the field of sarcoidosis. Their contributions offer the reader new insights, ideas and perspectives in the management of sarcoidosis. As Editor in Chief of the *European Respiratory Monograph*, I am most grateful to all the authors for gladly contributing and I am deeply indebted to Urich Costabel and Marjolein Drent, the guest editors of this issue, for their cooperation.

E.F.M. Wouters Editor in Chief

Eur Respir Mon, 2005, 32, viii. Printed in UK - all rights reserved. Copyright ERS Journals Ltd 2005; European Respiratory Monograph; ISSN 1025-448x. ISBN 1-904097-22-7.

INTRODUCTION

M. Drent[#], U. Costabel[¶]

[#]Sarcoidosis Management Centre, Dept of Respiratory Medicine, University Hospital Maastricht, Maastricht, The Netherlands. Fax: 31 842234007; E-mail: m.drent@lung.azm.nl; www.pul.unimaas.nl [¶]Dept of Pneumology/Allergy, Ruhrlandklinik Essen, Essen, Germany. Fax: 49 2014334029; E-mail: erj.costabel@t-online.de

More than a century ago, J. Hutchinson, a surgeon/dermatologist, identified the first case of sarcoidosis in London, UK. In the decades around the turn of the 19th century several independent observations were made on manifestations of a disease that is now regarded to be sarcoidosis. The cause or causes of this multiorgan disease remain unknown. The disorder is characterised by an abundant immunological T-helper cell type 1 response as the initial event, which leads to granuloma formation. More than 60% of sarcoidosis patients experience resolution during the following 2–5 yrs; in the others, the disease runs a chronic course. In some patients, it may lead to end-stage lung fibrosis with signs of permanent respiratory functional impairment. It is emphasised that clinicians may face difficulties when trying to categorise sarcoidosis in an individual case.

One of the most important clinical issues is to identify those cases that deteriorate and eventually develop fibrosis or other manifestations of chronic sarcoidosis. These patients should be monitored more closely and receive appropriate and timely treatment in order to avoid the development of unnecessary damage. In general, the state of a disease can be classified either by activity and/or severity. Unlike other disorders, activity in sarcoidosis does not necessarily indicate a progressive course, a fatal prognosis, or the need for medical treatment. Moreover, there is much discussion about the definitions of both, as it is difficult to make a clear distinction between activity and severity. In addition, there is overlap between the two. Inconsistency also exists on how to define severity. The course of sarcoidosis is mainly monitored by assessing clinical features and using auxiliary diagnostic procedures. Clinical parameters used to depict respiratory involvement include laboratory parameters, lung function tests, bronchoalveolar lavage and imaging procedures.

Recently, insight has been provided into the genetic risk for sarcoidosis and how the genetic make-up of a patient (genotype) determines the clinical presentation and outcome (phenotype). Genetically, sarcoidosis is a complex disease whose genetic predisposition is not determined by a single gene. Genetic associations can only be studied if the phenotypes of sarcoidosis are properly defined and categorised.

Patients with sarcoidosis most often suffer from symptoms related to the lungs, but may also suffer from a wide spectrum of other symptoms. The complicated multidimensional nature and wide range of symptoms of sarcoidosis underlines the need of a multidisciplinary approach and management. This includes the cooperation between clinicians and basic scientists to get better insight into this whimsical disorder. The patients need care from pulmonary physicians as well as other medical care representatives. Attention should be paid to the somatic as well as the psychosocial aspects of a disease that is a riddle to all patients and many doctors.

The current issue of the *European Respiratory Monograph* aims to offer clinicians guidelines for the management of their sarcoidosis patients, with special attention to extrathoracic and rare manifestations. The therapeutic approach to the various organ manifestations is reviewed. This includes the role of alternative drugs to reduce steroid-related side-effects. Currently, biological agents targeted at the selective inhibition of tumour necrosis factor- α , the major cytokine in the induction of granuloma formation, are under investigation.

Eur Respir Mon, 2005, 32, ix. Printed in UK - all rights reserved. Copyright ERS Journals Ltd 2005; European Respiratory Monograph; ISSN 1025-448x. ISBN 1-904097-22-7.