

A. Babics and F. Rényi-Vámos

Clinical  
and  
theoretical  
pictures  
of some  
renal  
diseases

AKADÉMIAI KIADÓ • BUDAPEST

# CLINICAL AND THEORETICAL PICTURES OF SOME RENAL DISEASES

by

Professor A. BABICS M.D.

MEMBER OF THE HUNGARIAN ACADEMY OF SCIENCES

Associate Professor F. RÉNYI-VÁMOS M.D. D.Sc.

Department of Urology, University Medical School Budapest

Foreword

by

SIR ERIC RICHES, M.C., M.S., F.R.C.S.

Surgeon and Urologist Emeritus, Middlesex Hospital, London

with 178 figures, many in colour



AKADÉMIAI KIADÓ

PUBLISHING HOUSE OF THE HUNGARIAN ACADEMY OF SCIENCES  
BUDAPEST, 1964

Translated by  
Dr. G. DIENES and Dr. F. SÓS

© *Akadémiai Kiadó, Budapest 1964*

# CONTENTS

Introduction .....	9
--------------------	---

## CHAPTER I

Functional anatomy of the kidney .....	11
1. Topography .....	11
2. Renal fascia .....	15
3. Renal capsules .....	16
4. Lymph vessels .....	18
a) General .....	18
b) Lymph vessels of the kidney .....	20
5. Calycolelvic system and ureter .....	44
6. Renal pedicle .....	47

## CHAPTER II

Function of the kidney with respect to the lymph vessels .....	49
1. Lymph vessels in general .....	49
a) Lymph circulation in the organism .....	49
b) Role of lymph vessels in fluid circulation .....	54
c) Insufficiency of lymph circulation .....	65
2. Renal function and the lymph vessels .....	69

## CHAPTER III

Dynamics of the urine-conveying system .....	75
--	----

## CHAPTER IV

Pyelectasis and hydronephrosis .....	90
1. Pressure conditions in the pelvis after obstruction .....	90
2. Resorption from the pelvis .....	101
3. Renal changes after pelvic occlusion .....	109
a) Pathologico-anatomical data .....	109
b) Renal function after pelvic obstruction .....	126
4. Destruction of parenchyma in hydronephrotic kidney and the role of lymph vessels .....	132

## CHAPTER V

Purulent nephritis .....	157
1. Literature .....	157
2. Pyelonephritis .....	158
a) Development of hematogenous renal infections .....	160
b) Development of ascending renal infections .....	161
c) Ascending infection of the renal pelvis .....	176
3. Reflex anuria in experimental pyelonephritis .....	179
4. Pyelonephritic contracted kidney (destruction of the kidney in glomerulo- nephritis) .....	181
5. Peripyelitis .....	195
6. Perinephritis .....	201
7. Epinephritis .....	209
8. Inflammation of the renal pedicle (pedunculitis renis) .....	212

## CHAPTER VI

Clinical and therapeutical problems .....	217
1. Clinical problems .....	217
a) General .....	217
b) Some clinical problems connected with dilatation of the calycope- lvis system .....	222
c) Contributions to diagnostics of purulent nephritis .....	233
2. Therapeutic problems .....	252
a) Operative treatment of calycope- lvis system dilatation .....	252
b) On problems concerning the principles of conservative renal operations and on pyelocalycotomy .....	261
c) Treatment of purulent nephritis .....	286
Bibliography .....	291
Author Index .....	305
Subject Index .....	309

Responsible for publication

GY. BERNÁT

Director of the Publishing House of the Hungarian Academy of Sciences  
and of the Academy Press

Responsible editor

JULIA NORTH

Technical editor

I. FARKAS

Printed in Hungary at the Academy Press, Budapest



# CLINICAL AND THEORETICAL PICTURES OF SOME RENAL DISEASES

by

Professor A. BABICS M.D.

MEMBER OF THE HUNGARIAN ACADEMY OF SCIENCES

Associate Professor F. RÉNYI-VÁMOS M.D. D.Sc.

Department of Urology, University Medical School Budapest

Foreword

by

SIR ERIC RICHES, M.C., M.S., F.R.C.S.

Surgeon and Urologist Emeritus, Middlesex Hospital, London

with 178 figures, many in colour



AKADÉMIAI KIADÓ

PUBLISHING HOUSE OF THE HUNGARIAN ACADEMY OF SCIENCES

BUDAPEST, 1964



Translated by  
Dr. G. DIENES and Dr. F. SÓS

© Akadémiai Kiadó, Budapest 1964

## FOREWORD

This scholarly work published by the Hungarian Academy of Sciences is now available for the first time in the English language; it will command the close attention of all who are interested in the physiology and pathology of the kidney in all its aspects.

Too often in the past the study of the anatomy of the kidney has been divorced from the study of its function. Professor Babics and Dr. Rényi-Vámos have remedied this defect by giving a detailed account of the functional anatomy of the kidney with special reference to the part played by the lymph vessels and the fluid circulation within the viscus. Previous studies of the renal lymphatics, for example by injection methods, have led to faulty conclusions; newer experimental techniques have demonstrated the distribution of the efferent lymph vessels in the renal hilus and have traced them from their origins as closed and blind tubes in the interstitial spaces to their termination in the lumbar trunk.

The role of the lymph vessels in the fluid circulation, a study which has formerly lagged behind, is shown to occupy an important part, secondary to that of the blood circulation, in draining water from the tissue fluid. The mechanism of the urine-conveying system, controlled by vegetative nerves, is the subject of a detailed description with emphasis on the factor of calyceal contraction. A distinction is drawn between pyelectasis, in which there are no marked changes in the calyces, and hydronephrosis, in which the calyceal muscle is exhausted. Drugs which affect the mechanism have been tested.

New light is thrown on the mode of haematogenous and ascending renal infections. The importance of the fatty and connective tissue in ascending renal infection is discussed; it is claimed that the route of ascent is interstitial rather than lymphogenous and does not involve the lumen of the lymph vessels.

The application of much experimental work to the prevention and treatment of renal disease is reiterated. Surgical treatment must be

conservative but should correct stagnation and aim at dealing with the underlying condition as well as its manifestation such as a stone. If the urine-conveying system must be opened which should be avoided whenever possible, it is better to expose the neck of a calyx and make the opening there rather than to do a pyelotomy or a nephrotomy; the latter is particularly undesirable. If the ureter has to be opened in order to remove a stone it must be closed with meticulous care to avoid leakage of urine which will cause periureteric fibrosis; drainage by a ureteric catheter or nephrotomy is not acceptable as it predisposes to infection and added fibrosis.

This volume deserves the concentrated study of all who are concerned in the investigation and treatment of renal diseases; it throws much light on many problems which are at present imperfectly understood.

ERIC RICHES

# CONTENTS

Introduction .....	9
--------------------	---

## CHAPTER I

Functional anatomy of the kidney .....	11
--	----

1. Topography .....	11
2. Renal fascia .....	15
3. Renal capsules .....	16
4. Lymph vessels .....	18
a) General .....	18
b) Lymph vessels of the kidney .....	20
5. Calycolelvic system and ureter .....	44
6. Renal pedicle .....	47

## CHAPTER II

Function of the kidney with respect to the lymph vessels .....	49
--	----

1. Lymph vessels in general .....	49
a) Lymph circulation in the organism .....	49
b) Role of lymph vessels in fluid circulation .....	54
c) Insufficiency of lymph circulation .....	65
2. Renal function and the lymph vessels .....	69

## CHAPTER III

Dynamics of the urine-conveying system .....	75
--	----

## CHAPTER IV

Pyelectasis and hydronephrosis .....	90
--------------------------------------	----

1. Pressure conditions in the pelvis after obstruction .....	90
2. Resorption from the pelvis .....	101
3. Renal changes after pelvic occlusion .....	109
a) Pathologico-anatomical data .....	109
b) Renal function after pelvic obstruction .....	126
4. Destruction of parenchyma in hydronephrotic kidney and the role of lymph vessels .....	132

## CHAPTER V

Purulent nephritis .....	157
1. Literature .....	157
2. Pyelonephritis .....	158
a) Development of hematogenous renal infections .....	160
b) Development of ascending renal infections .....	161
c) Ascending infection of the renal pelvis .....	176
3. Reflex anuria in experimental pyelonephritis .....	179
4. Pyelonephritic contracted kidney (destruction of the kidney in glomerulo-nephritis) .....	181
5. Peripyelitis .....	195
6. Perinephritis .....	201
7. Epinephritis .....	209
8. Inflammation of the renal pedicle (pedunculitis renis) .....	212

## CHAPTER VI

Clinical and therapeutical problems .....	217
1. Clinical problems .....	217
a) General .....	217
b) Some clinical problems connected with dilatation of the calyco-pelvic system .....	222
c) Contributions to diagnostics of purulent nephritis .....	233
2. Therapeutic problems .....	252
a) Operative treatment of calyco-pelvic system dilatation .....	252
b) On problems concerning the principles of conservative renal operations and on pyelocalycotomy .....	261
c) Treatment of purulent nephritis .....	286
Bibliography .....	291
Author Index .....	305
Subject Index .....	309

## INTRODUCTION

When dealing with the pathological changes and functions of the kidney, we must emphasize that the urine-producing renal substance and the urine-conveying system must be viewed as a whole because neither of them is capable of fulfilling its task in the human organism without the other. Any preference as to their importance is merely a question of their succession. This seems to be supported by the phylogenetic evolution of the kidney: in the course of evolution two separate original tendencies have secondarily established connection with each other in such a manner as to cause, in the last phase of development, the urine-producing renal substance and the urine-conveying system to form an inseparable functional unity.

In kidney operations we often encounter phenomena that should be regarded as permanent consequences of the basic disease, yet go on affecting the activity of the kidney even when the cause of the disease, the stone for instance, is eliminated. The edema of the fatty tissue pervading and filling up the renal sinus and the subsequent contraction of the tissue are known, even in sterile conditions, to be concomitant to inflammatory processes taking place in the calyco-pelvic system or to the stones in the pelvis. Such a development is not indifferent for the function of the kidney, so much so that even after elimination of the basic disease it constitutes a serious obstacle to regeneration.

To analyse these problems and to find their solution is not only the task of pathologists and pathophysiologists but primarily that of the renal surgeon. The clinical practice supplies us with theoretical problems whose solution must be attempted in practice. In this field direct observations and experience are of the highest value; we were relying on them when elaborating the theoretical questions closely connected with the clinical ones.

Beside some indispensable anatomical, physiological and similar studies, we shall deal, in the first place, with the lymph vessels and fluid circulation of the kidney and their importance, with the consequences of the functional impairment of the ureter as well as with the relevant diagnostical and therapeutical problems. We shall make various new suggestions which, though possibly incomplete in some places, will, we trust, reveal important and fundamental angles, especially in connection with operative therapeutics; one of them being that,

beside the great importance of curing the pathological process, of removing the afflicted section, it is of equal significance, above all in renal surgery, to choose the proper method of intervention and to be aware of the postoperative conditions created to ensure later functions.

The publication of the present work has been made possible by the generosity of the Hungarian Academy of Sciences having financially supported our investigations for seven years and enabled us to employ clinical collaborators for solving the problems of detail. We wish to express our thanks to all our collaborators for their valuable help. Our thanks are also due to D. Szabó, M.D. who was responsible for some of the coloured figures, and to Dr. G. Dienes, Dr. Feodora Sós and Mrs. J. North and to the Publishing and Printing House of the Hungarian Academy of Sciences for the careful work of their staff.

## CHAPTER I

# FUNCTIONAL ANATOMY OF THE KIDNEY

### 1. TOPOGRAPHY

Our interest will be centred on the behaviour of the renal substance, the capsule, the renal pelvis and calyces, the fatty tissue surrounding the kidney, considered as a unity, in case of inflammation, as well as on the function of the lymph vessels and the lymph. The description and explanation of their correlations seem to require a brief survey of various sections of renal anatomy, and of the interrelation of anatomic formations. The lymph vessels are in close relation with the blood circulation of the kidney and in an even closer one with the circulation of the renal interstitial fluid. Therefore, we shall deal with the blood vessels of the kidney and the interstitial space, as well as with the lymph vessels which we intend to relate to the physiological function of the kidney.

The kidney substance is covered with the fibrous capsule or *capsula propria*. This capsule, in turn, is surrounded by a fatty capsule of loose structure, the *capsula adiposa* which is lined in front and at the back by the renal fascia. The front sheet of the renal fascia is in contact with the peritoneum, while its back sheet adheres to the *musculus quadratus lumborum* by some pararenal fatty tissue. Both sheets of the fascia extend downwards and the space between them is filled with fat in which, like in a fascial pouch, we find the (extrarenal) pelvis and the short upper section of the ureter (*pars libera*). The latter having left the fatty capsule adheres to the back wall of the peritoneum (Figs 1—3).

No attempt is made here to give a descriptive anatomy of the kidney, but it seems advisable to stress the macroscopical and histological findings referring to the relation of the renal substance, pelvis, calyces and so facilitate further discussion.

The renal sinus comprises the necks of the calyces and part of the pelvis connected to the renal substance by a thin layer of fat. Their usual connection, as described here, is not uniform even under normal circumstances. Apart from the many variants in form and size of the renal pelvis and calyces, if the pelvis and the necks of calyces alone are considered, there is an even greater variety if we take the finer singularities into account. In view of the numerous variations we can state that there are no two identical renal pelvises just as there are no two completely identical faces. This statement is not only valid theoretically; a good observer may detect manifold differences in the shape



of the renal pelvis and calyces even on X-ray pictures which, indeed merely show rough outlines. The morphological differences are by no means irrelevant; we only need to remember the small intraparenchymatous renal pelvis in the renal sinus. This type of pelvis, as a whole is connected to the renal substance by the surrounding fatty tissue of the sinus. Such a position is obviously not indifferent in an inflammatory process spreading from the pelvis towards its environment.

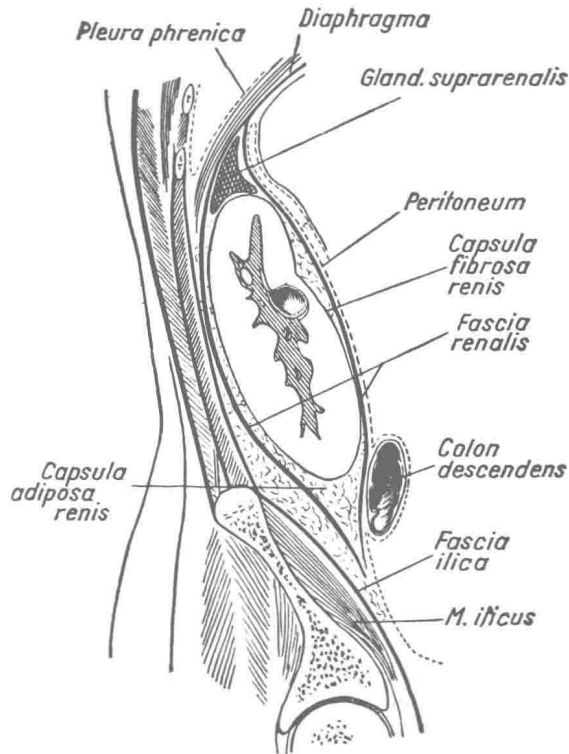


Fig. 1. The kidney and its environment (after Corning)

By detaching the fatty tissue, a narrow gap can be created between the pelvis, and either the necks of the calyces or the renal substance. Deep in the sinus, toward the calyces, this gap gradually diminishes and eventually tapers off because the calyces near the papillae are so closely linked to the renal substance that they cannot be detached from it without a lesion. This important anatomic feature can be described by saying that the calyces begin in the depths of the sinus where they adhere to the renal substance.

The mucous membrane of the calyces overlaps the papillae protruding into the fornices (Fig. 4). The connection is looser along the