

## Foreword

Renal stone disease is a most ancient and common affliction of man. Over a seventy-year life span, it is estimated that as many as 15% of some populations will develop renal stones. No age is spared and no country or ethnic group protected from this common clinical problem. Most, but not all, patients who develop a stone will eventually form others. Although very few individuals die as a direct result of stone disease, it does lead to substantial morbidity from pain, urinary tract infections and obstructive uropathy.

In the past few decades, substantial progress has been made in understanding the basic pathophysiologic mechanisms of stone disease, which has subsequently led to rational and effective programs for both its treatment and prevention of recurrence. Diagnostic study protocols to identify underlying mechanisms have now become available in most countries, thereby allowing for an accurate categorization of patients with renal stone disease.

This handbook to assist physicians in the diagnosis, treatment and prevention of stone disease has been developed by its three editors, each of whom has contributed significantly to our basic understanding of stone disease. Their handbook is oriented toward clinicians and health care professionals to help them quickly and effectively study and treat patients with stone disease and assist them in developing effective approaches to the prevention of further stone development. In addition, it is written in a manner that could make it very useful in explaining to patients the more important aspects of their disease. It is very well organized, making it simple to use as a reference work and its utility is strengthened by an outline format, which facilitates understanding of diagnostic studies and treatment plans. All of the major stone types are discussed in detail, including sections on the less frequent stones, such as those composed of xanthine and 2,8-dihydroxyadenine. Of particular value is the discussion of diagnostic studies to be performed in those patients for whom a stone is not available for analysis, an increasingly common event now that lithotripter use has made it more difficult to recover stones.

With our ability to determine more accurately than ever the basic mechanisms of stone formation and, therefore, to develop more effective treatment programs, recurrent stone disease should become less and less common. The editors and authors of this text have made an important contribution to this effort with this handbook which should be of immense help to health care professionals who care for patients with renal stones in efficiently and effectively guiding them through the appropriate diagnostic studies and the development of safe plans for treatment and prevention. Their patients will be ultimate beneficiaries of this text. We are grateful to its editors and authors for such a useful and usable book.

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## Preface to the first edition

During the past 15 years, therapeutic procedures for urinary stone disease have undergone fundamental changes. Alternative methods of lithotripsy have made open surgery superfluous in most countries. Repeated treatment with extracorporeal shock wave lithotripsy (ESWL) is relatively free of side effects and, as a rule, does not interfere with kidney function. However, one should note that these modern methods of therapy serve only to treat the symptoms of the disease – the stone. The actual cause of stone formation – infection, malnutrition, metabolic abnormalities, etc. – frequently remains unnoticed, so that recurrence is bound to occur.

With a yearly incidence rate of 0.5% in Europe, the number of recurrences approximates 80%. However, with detailed knowledge of the causes of urinary stone formation, recurrences can largely be prevented. To achieve this goal, there is a need for laboratory diagnostics, including stone and urine analyses. Furthermore, it is necessary to investigate the dietary (nutritional) habits of the patient so that they can be given comprehensive guidelines for their specific kind of stone disease. Finally, the most appropriate post-operative follow-up care must be provided including, if necessary, the use of drugs. The patient should be encouraged to take part in a two-year therapy with regular checks. This may spare the patient further and repeated illness and can reduce the costs of therapy quite considerably.

The present book is a manual for physicians in charge who, in the course of practice, encounter urinary stone patients. It provides appropriate diagnostic procedures as well as general advice for recurrence prophylaxis.

To start with, there is a survey of outpatient diagnosis and treatment of acute urinary stone disease as it occurs in emergency medicine. If no stone analysis is available, general and unspecific therapeutic measures may be used. If, however, the type of stone is known, the indication as described in the respective chapter should be applied. The layout of the book is arranged so that on the right-hand pages, concise and distinct information is presented, while on the left-hand pages the respective detailed explanation is given. We trust that this book serves as a useful and practical guide to all physicians treating their urinary stone patients.

The authors  
July 1996

## Preface to the second edition

The first edition of our book and an unamended reprint stimulated great interest world-wide. Karger Publishers consequently asked us to prepare a second revised edition. We are pleased to comply with this request, and are grateful to the staff of the publishing house for their excellent cooperation.

A recent epidemiological survey revealed that 5.5% of all men and 4% of all women in Germany already had urinary stones (prevalence). In the case of men, 10% of those aged 50 or above were stone formers. Acute disorders were recorded in 1.5% of the population in the year 2000 (incidence). The high incidence of this disease makes it clear that modern methods of lithotripsy (ESWL, PNL, URS) have led to the continued disregard of metabolic diagnosis and the prevention of recurrent stone formation. It is in the vital interest of both patients and health economics that prophylactic measures are undertaken for each stone patient in order to prevent recurrences.

During the revision of this book due attention has been paid to the current literature (see references) as well as the European and international guidelines on urolithiasis. Certain special methods of metabolic clarification have been supplemented in the appendix. Detailed tables referring to the oxalate, calcium and uric acid content of food have been added. We assume that the reference values for urinary excretion derived from healthy children will help to improve the treatment of children with urinary stones.

We trust that this book will prove to be helpful to both doctors and their patients.

The authors  
September 2001

## Preface to the third edition

‘Urinary stones are thriving’ – that is certainly not a good slogan!

Despite the progress in clinical stone treatment, the incidence of urolithiasis is rapidly increasing. The methods for stone removal – SWL, URS, PNL – have constantly improved, and each method has its preferred application depending on the location and size of the stones involved. However, increasing attention is being paid to the fact that urinary stones less than 1 cm in size can pass spontaneously. A conservative approach with stone expulsion therapy via increased diuresis in combination with physical exercise and – if necessary – medication with  $\alpha$ -adrenoreceptor antagonists, calcium channel blockers and/or non-steroidal anti-inflammatory agents has proved successful. Expulsion rates of up to 70% have been achieved for stones in this category. In recent years, the guidelines for urinary stone therapy of urological societies (AUA, EAU, DGU) have been updated by expert committees. While the spectrum of available therapeutic methods has remained similar, application of these methods in various countries differs greatly. SWL is still the most important method for active stone removal. Improved flexibility of the instruments and the more widespread use of laser therapy have enhanced the importance of endourologic procedures, also in the treatment of renal stones. The efficiency rates for complete stone removal of staghorn calculi are between 50 (SWL) and 80% (PNL). For ureteral stones, stone-free rates of more than 90% can be achieved with both URS and SWL. However, residual concretions or fragments may often remain in the body after stone removal, and when this material does not pass spontaneously directly after completion of the treatment, it can provide the nucleus for a new stone. From a physico-chemical point of view, no insignificant residual concretions can ever occur when the urine is constantly supersaturated. Regardless of any residual concretions, epidemiological studies have shown that 25% of stone patients are at risk of multiple stone formation. Accordingly, differentiation has been made between high- and low-risk patients in the guidelines. This differentiation is based on the stone case history, the results from the stone analysis, and a basic laboratory diagnostic examination. For the prevention of recurrences in high-risk patients, an elucidation of metabolic risk factors is vital and may be followed by a treatment appropriate for the stone type. Consistent metaphylaxis can prevent more than 50% of recurrences. Patients not only expect to be relieved from symptoms caused by stones, but they also wish to remain free from recurrences. This should be the benchmark against which any therapeutic regimen is measured.

In the 3rd edition of *Urinary Stones*, the recommendations contained in the international and German guidelines relating to urinary stone therapy have been taken into account. Also the latest scientific progress in clinical and laboratory diagnosis, together with dietary therapy and medication, have been included. The current edition also relates more deeply to the specific situation of urolithiasis in childhood.

Excellent cooperation with the Karger Verlag has enabled a fundamental revision of the previous edition with the result that state-of-the-art tools are now available for the prevention of recurrences.

May everyone applying our recommendations enjoy great success with the treatment of their patients!

The authors  
March 2009