Contrast-Enhanced Ultrasound of the Urinary Tract

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Springer

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ISBN 978-88-470-5430-1 ISBN 978-88-470-5432-5 (eBook)
DOI 10.1007/978-88-470-5432-5
Springer Milan Heidelberg New York Dordrecht London

Library of Congress Control Number: 2013937730

The contents of this book are based on: Ecocontrastografia dell'apparato urinario. G. Regine, M. Atzori, R. Fabbri © Springer-Verlag Italia 2012.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

The ever-increasing return to the use of ultrasound contrast media has eliminated, or is in the process of eliminating, a kind of subordination of this method in comparison with other imaging technologies, such as TC or RM, considered to be more accurate, and therefore better for diagnosis. Yet, for a number of years now ultrasound has found its contrast media which, in the form of microbubbles, has given the technique a notable 'effervescence', opening the way for many new tools, both diagnostic and in the future probably also treatments, which were before unthinkable. Following the current growing interest, this paper seeks to analyze the applications of ultrasound using second-generation contrast enhancement for renal pathology, comparing our results with the current publications on the matter. The unique chemical and physical characteristics of the type of contrast chosen, combined with the use of specially designed software which is now standard on most middle-to high-grade ultrasound equipment, appear to be advantageous particularly in the evaluation of ischemic or traumatic pathology and in the characterization of cystic renal lesions. Another application now validated is in the follow-up after a kidney transplant, allowing for the identification of potential early or late complications, when used with perfusion indexes.

The most recent applications include the attempt to identify solid renal lesions and to define the T parameter in the staging of bladder lesions. Uses of the technique that are still 'unofficial' include evaluations of the vesicoureteral reflux in pediatric patients, and in general, all uses in the pediatric field.

The authors, delineating their experience based on a retrospective evaluation of the cases they have seen, hope to have produced something useful for those who have dedicated themselves to the use of microbubbles, or plan to do so, in the daily challenges of diagnostics that await them, whether experts or beginners. They also express their deep gratitude to their colleagues at the "Unità Operativa", in particular Dr. Simonetta Pascoli, untiring proponent of the method, as well as T. S. R. M Carlo Pace for the technological assistance which was vital for the present contribution.

Rome, May 2013

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