
Pediatric Hepatology and Liver Transplantation

Lorenzo D'Antiga
Editor

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*To Martina, the sun of my life,
and to our children Francesco, Mattia, Anna and Maddalena
who make our days full of joy, projects and hope for the future*

*To Mum and Dad[†]
so trustful and proud, since the very beginning*

*To my brothers
Luca, who, as a young employee, made my studies at the Medical School
affordable,
Alvise[†] and Angelo, always supportive during my career;
and Maria Giovanna[†], who passed away at 4 months of age from an unknown
liver disease*

*To my mentors
Lucia, Giorgina, Anil
and many others I am still learning from*

*To all doctors who take tender care of the sick ones
and consider it a privilege*

Foreword

Paediatric hepatology has gone from obscurity to a status of specialty in its own merit over the span of seven decades. Though jaundice in babies and children had been occasionally reported in the past, liver disorders in childhood were considered extremely rare and almost always lethal. The real burden of paediatric liver disease was first recognised in the late 1950s and became a focus of attention only in the 1960s and 1970s.

Visionary men, like Morio Kasai, Daniel Alagille and Alex Mowat, put paediatric hepatology firmly on the map of paediatrics by the 1970s, recognising the importance of concentrating expertise in specialised centres, in order to elucidate physiopathological mechanisms, with consequent improved management and outcome for children with liver disease. This has resulted over a relatively short period of time in a vortex of new information, including the discovery of several causes of juvenile liver disease, leading not only to successful specific managements, but also to a better understanding of the liver physiology, based on the discovery of the deleterious effect of genetic defects affecting synthesis, transport and function of proteins manufactured by the liver.

In parallel, grew the awareness that liver disorders of adulthood can affect children as well, but that in children they present important differences, which need to be taken into account for successful treatment, examples of these conditions being autoimmune liver disease, viral hepatitis and acute liver failure.

Despite improved knowledge, the prognosis of paediatric liver disease remained severe for decades, with mortality rates between 50 and 60% within a few years from diagnosis for many conditions, until the advent of liver transplantation as a standard mode of treatment for children with end-stage liver disease in the early 1990s, which rapidly led to long-term survival rates of over 95%.

Current tasks are to clarify the physiopathological mechanisms of those juvenile liver diseases that remain without a recognised cause, to perfect medical management to avoid transplantation—including isolated hepatocyte or gene therapy—and to overcome the problems of rejection and long-term complications for those patients who need a liver transplant.

D'Antiga's *Pediatric Hepatology and Liver Transplantation* stems from the Editor's ambitious aim to provide a comprehensive, practical and up-to-date description of paediatric liver disorders and their management, spanning from historical notes, liver anatomy and physiology, to the discovery of new conditions and their management, to liver transplantation, to the peculiarities in children and adolescents of liver disorders that affect also adults.

This textbook will be highly valuable not only to gastroenterologists, paediatric hepatologists and transplant surgeons, but also to medical students, residents and adult physicians looking after patients with liver disease, as improved knowledge and management of hitherto lethal paediatric liver conditions has led to survival into adulthood and transition to adult services.

Lorenzo D'Antiga's aim was ambitious: the result excellent.

Giorgina Mieli-Vergani
London, UK

Preface

The liver may be considered “a timid, clever and resilient organ”, because of its circulation enclosed between two capillary beds and the hidden excretion in the middle of the digestive tract, its pivotal role in human metabolism and its resistance to suffering if not to the exhaustion of the reserves. These intrinsic features and the relative rarity of hepatic disorders in infancy make liver disease in children a narrow and rather unknown field.

The liver goes through a perinatal immaturity phase during which it is prone to insults of various kinds but then matures and acquires the silent and stable control of most of the functions of body homeostasis and intermediate metabolism. The reasons why the functions and the diseases of the liver are still little known, and the expertise is prerogative of few specialized centres, probably reside in the lack of non-invasive tests allowing to understand the punctual state of health of this organ.

The purpose of this book is to try shedding some light on this field, spreading the experience made in the major international centres of paediatric hepatology and transplantation. Indeed the strength of this work stands on the contribution of the greatest experts working in the field all over the world, who kindly agreed to grant their expertise preparing a chapter of this book. It has been a great pleasure and honour having a prompt acceptance from persons I consider the top experts in various hepatology subspecialties and from whom I keep learning. Once again I experienced that friendship and mutual respect is a key component of any team project.

I am also particularly grateful for having the chance to deepen my experience in the field of education I have always been very fond of. In that respect the attempt of this work is to give a comprehensive (although certainly incomplete) scenario of what a physician involved in the care of paediatric liver disease might face, opening the lens of the camera to a wide angle, and helping the reader place information within the broader topic of child health and global health. For this reason the first chapter, taking advantage of the World Health Organisation data, focuses on the relevance of liver disease worldwide, both in adults and in children. Part III is entirely devoted to paediatric liver disease in continents having different epidemiology and standards of care, appearing less frequently in the current literature but certainly taking care of the largest proportion of children with liver disease in the world. Another novelty of this book is the balanced examination of both paediatric liver disease and liver transplantation, discussed in the first two parts, since these topics are inherently related, given that most chronic liver disorders eventually require organ replacement. Several chapters are dedicated to emerging issues in the field, such as long-term graft dysfunction, quality of life and transition to adult care, but also to newly developed strategies to manage our patients, such as next-generation sequencing testing, cell and gene therapy.

My wish is to provide a helpful tool for a range of practitioners looking after children with liver disease, from residents making their first approach to paediatric liver disease through to specialists working in transplantation centres. I really hope this book can contribute to the care of children with liver disease.

Bergamo, Italy

Lorenzo D’Antiga



The Editor would be pleased to receive from the readers any suggestion aimed to improve the next edition of this book. Please send your precious comments to the following mailing address: dantiga.book@gmail.com.

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