Gastroenterology has emerged from paediatrics as a separate discipline after 1978, due to the development of basic sciences, i.e., biochemistry, immunology, pathomorphology and introduction of miniaturized endoscopic and radiological equipment. This paper describes the most significant achievements in the areas of gastroenterology, hepatology, and nutrition in children in particular medical centres in Poland. It also discusses the role of the Polish Society for Paediatric Gastroenterology, Hepatology and Nutrition, the role of the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN), and the role of other Scientific Societies and Foundations supporting the development of science and education. The emphasis has been placed upon utilitarian research and education with regard to the management of children with gastrointestinal and hepatic disease.

**Key words:** history of paediatric gastroenterology, Polish Society for Paediatric Gastroenterology, Hepatology and Nutrition, milestones of paediatric gastroenterology

**INTRODUCTION**

The progress in basic sciences, deeper understanding of aetiopathogenesis of diseases, introduction of new diagnostic procedures, miniaturized diagnostic equipment (endoscopy), imaging techniques, organ biopsy, resulted consequently, as in other clinical specialties, in the emergence of a separate subspecialty, i.e., paediatric gastroenterology (*Table 1*).
Historically, the development of paediatric gastroenterology in Poland can be divided into three time periods (1):

- **before the year 1939**
- **until 1978** the Gastroenterology Section was established within the framework of the Polish Society for Paediatrics
- **1978 - present.**

**PAEDIATRIC GASTROENTEROLOGY IN POLAND: A BRIEF HISTORICAL SURVEY OF ACTIVITIES IN PARTICULAR CENTRES**

**Period One (before 1939)**

- Research focused on acute diarrhoea and nutritional disorders; treatment with pectin diet, acidified milk, subcutaneous rehydration.
- In 1908, T. Boy-Żeleński started his "Milk Drop" Centre for mothers unable to breastfeed their babies.
- Introduction of education in hygiene and sanitation (W. Szenajch, "Rady dla matek" ("Tips for Mothers").
**Period Two (1939 - 1978)**

Main interests involved the following issues:
- introduction of parenteral rehydration in acute diarrhoea (Barañski),
- infectious pathogenesis of acute diarrhoea (Brokman),
- electrolyte disturbances and their treatment (Halikowska, Sieniawska, Starkiewiczowa),
- pathogenesis of chronic deficiency conditions, i.e., athrepsia (Michałowicz, Zalewski),
- indirect diagnostic tests in infectious hepatitis (malabsorption syndrome) (Tomaszewski, Zalewski).

**Period Three (1978 - present)**

Those years saw further development which encompassed (*Table 2*).

*Table 2. Milestones in the establishment of paediatric gastroenterology in Poland*

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1978</td>
<td>Gastroenterology Section, Polish Paediatric Society</td>
</tr>
<tr>
<td>1985</td>
<td>T. Zalewski, Choroby Przewodu Pokarmowego (Monography Gastrointestinal Diseases)</td>
</tr>
<tr>
<td>1998</td>
<td>Polish Society for Gastroenterology, Hepatology and Nutrition</td>
</tr>
<tr>
<td>1990</td>
<td>Specialty Divisions (Coeliac Disease, Food Allergy, GI motility, IBD, Pancreatic Diseases, Liver Diseases, Endoscopy, Nutrition)</td>
</tr>
<tr>
<td>1999</td>
<td>ESPGHAN Symposium, Warsaw</td>
</tr>
<tr>
<td>2000</td>
<td>Pediatria Współczesna. Gastroenterologia, Hepatologia i Żywienie Dziecka (Modern Paediatrics Paediatric Gastroenterology, Hepatology and Nutrition)</td>
</tr>
<tr>
<td>1999</td>
<td>Standardy Medyczne (Medical Standards)</td>
</tr>
</tbody>
</table>

- focus on paediatric gastroenterology at Departments of Teaching Hospitals of Medical Universities of Warsaw, Cracow, Zabrze, Wrocław, Poznań, Gdańsk, Białystok, Bydgoszcz, Łódź, Katowice, Lublin, Szczecin.
- establishment of the Department of Gastroenterology, Hepatology and Nutrition at The Children’s Memorial Health Institute, Warsaw in 1979 (J. Socha), and at the Polish Mother Health Centre in Łódź, 1989 (I. Planeta-Malecka), which, additionally, helped establish multidisciplinary emergence of gastroenterology, hepatology and nutrition in children under 18 years of age.

The development of gastroenterology is closely associated with research into coeliac disease. (Warszawa: T. Zalewski et al.; Zabrze: B. Hager-Malecka, K. Karczewska, A. Dyduch). The global-scale achievement included the development and introduction of immunoassay against endomysium (Ig A EmA) by T. Chorzelski (2). The disease prevalence was defined, diagnostic and therapeutic standards were established, genetic aspects were assessed, clinical course, with a
particular attention to atypical forms was evaluated, its coexistence in diabetes mellitus, and in Turner’s syndrome was described (M. Czerwonka-Szaflarska, K. Karczewska, A. Radzikowski, J. Rujner, and others). Immunological testing was introduced to monitor gluten content in food (IP-CZD, H. Gregorek, A. Stolarczyk, J. Socha). Considerable attention was paid to osmotic diarrhoea, especially secondary disaccharidase deficiency (Zabrze: B. Hager-Malecka, A. Dyduch, K. Karczewska; Warsaw: T. Zalewski, L. Tomaszewski; Poznań: M. Goncerzewicz, J. Socha, W. Cichy). The prevalence of primary adult hypolactation was determined at approximately 37% (J. Socha et al) (3). Breath hydrogen analysis test was introduced into the diagnostics of lactose intolerance (The Children’s Memorial Health Institute). Reports were published of a few cases of secretory diarrhoea in vipoma (J. Socha et al) (4). In cooperation with a group of Finnish researchers, genetic mutations in Polish patients with chloride diarrhoea were assessed (J. Socha, L. Tomaszewski et al) (5).

The Department of Paediatrics, Gastroenterology and Nutrition in Wrocław has centred their interest on coeliac disease, Helicobacter pylori infection, inflammatory bowel disease, gastrointestinal disorders, particularly on gastro-oesophageal reflux, cholestasis and diseases of the pancreas (F. Iwańczak, B. Iwańczak) (6).

The Polish-American Children’s Hospital was founded in Cracow in 1965. Its Department of Paediatrics, Gastroenterology and Nutrition was then headed by B. Kańska and J. Stopyrowa, and at present it is under the guidance of K. Fyderek who was one of the first Polish researchers to investigate gastro-oesophageal reflux in children. M. Kruszewska studied bone disorders in coeliac disease. The current research programme is focused on motility study, inflammatory bowel disease, acute diarrhoea, probiotics, and Helicobacter pylori infection (7 - 9).

Clinical centres in Zabrze and Katowice carry out their research into noninfectious diarrhoea, disaccharidase deficiency, coeliac disease (B. Hager-Malecka, K. Karczewska, A. Dyduch, H. Woś) (10 - 12).

Researchers in Białystok have been carrying out a complex study of food allergies (epidemiology, pathogenesis, diagnostic tests introduced in Poland with a double blind trial, treatment), gastrointestinal disorders, Helicobacter pylori infection; they have also introduced biochemical markers in the assessment of hepatic fibrosis (M. Kaczmarski, D. Jastrzębska-Piotrowska) (13).

The Department of Paediatrics, Allergic Diseases and Gastroenterology in Bydgoszcz was established in 1998. The key research projects include new opportunities in the diagnosis of coeliac disease, prevalence and clinical course of coeliac disease in risk groups, infections with hepatotropic viruses, long-term effects of gastro-oesophageal reflux (M. Czerwonka-Szaflarska) (14).

Clinical research conducted at the Gdańsk clinical centre focuses on coeliac disease, food allergy, functional disorders (M. Korzon) (15, 16).

Researchers in Rzeszów mainly concentrated on functional disorders of gastrointestinal tract and IBD (R. Korczowski, W. Romańczuk) (17).
The staff at the Department of Gastroenterology and Metabolic Diseases in Poznañ carry out research into chronic diarrhoea, coeliac disease, intestinal peptidases and disaccharidases, the role of intestinal enterohormones in coeliac disease, cystic fibrosis, *Helicobacter pylori* infection (W. Cichy, I. Ignyś, M. Goncerzewicz, M. Krawczyński, J. Walkowiak).

Two centres in Łódź are concerned with gastroenterology. In The Polish Mother Health Centre (set up in 1989). I. Planeta-Malecka was the first paediatrician to investigate peptic ulcer disease and gastritis. In 1969, the first in Poland Gastroenterology and Endoscopy tertiary centre was established, which offered a total patient care; it served as an outpatient clinic, provided hospital treatment, and referred patients to sanatoria; it was even an organiser of summer scouting camps. The major research has been focused on the role of *Helicobacter pylori* in the pathogenesis of the diseases of the stomach and duodenum, chronic diarrhoea, IBD, gastrointestinal disorders, diseases of the pancreas, chronic viral hepatitis (I. Planeta-Malecka, K.Grzybowska, T. Wąsicka) (18 - 24).

At the Department of Paediatric Gastroenterology and Allergic Diseases at Łódź headed by K. Wąsowska-Króliskowska, the major research interest has been directed at complex diagnostics and treatment of coeliac disease, secondary enteropathies, motility disorders with multidirectional assessment of functional disorders by means of pH-metry, bilitec 2000, manometry, electrogastrography (EGG), also at managing diabetes. Further activities are targeted at diagnostics, treatment and prevention of allergic diseases in children, with particular attention to food allergy determined by challenge tests (double-blind placebo-controlled trial). Other areas of interest include *Helicobacter pylori* infection and the presence of fungi in gastrointestinal tract in children with gastritis and duodenitis.

The Department of Paediatrics and Gastroenterology in Lublin was established in 1998. The major research areas include bioelements and paediatric disease magnesium deficiency, evaluation of various diagnostic techniques used in *Helicobacter pylori* infection, endoscopic findings in extraabdominal disease, chronic bowel inflammatory process as a risk factor in urolithiasis (A. Papierkowski) (25).

The Department of Gastroenterology, Hepatology and Nutrition, Medical University of Warsaw, has been involved in the study of coeliac disease, development of its diagnostic standards in a joint project with ESPGHAN (T. Zalewski, T. Chorzelski, A. Radzikowski), development and clinical introduction of the immunoassay IgA EmA, healthy children nutrition, nutrition in children with food allergy, assessment of the *Lactobacillus* GG efficacy in the prevention and treatment of rotavirus diarrhoea (H. Szajewska in cooperation with Dr Mrukowicz from the Institute of Paediatrics, Cracow) (26 - 29).

The Department of Gastroenterology, Hepatology and Nutrition, The Children’s Memorial Health Institute, has focused their interests on chronic diarrhoea, i.e., secretory diarrhoea, genetics of chloride diarrhoea, vipoma, autoaggressive diarrhoea, introduction of national monitoring of gliadin content
in food for coeliac children, development of IBD, Vitamin D metabolism, diagnostic standards, laboratory diagnostic procedures for \textit{Helicobacter pylori} strains and their antibiotic sensitivity, introduction of endoscopic polypectomy into the clinical practice (J. Socha, J. Ryżko et al.) (30 - 35).

"\textit{Diseases of the Pancreas in Children}" was the first Polish text on the subject written by K. Bożkowa in the 1960's. The rise in the vast knowledge of the pancreas was generated by establishing a special centre at the Mother and Child Institute, which provided complex management of children with cystic fibrosis (CF) (genetics, diagnostics, pulmonology) implemented by K. Bożkowa, T. Mazurczak, J. Bal, A. Milanowski, J. Żebrak (Rabka). A CF working group and the Society for Parents of Children with Cystic Fibrosis (MATIO) were set up within the Polish Society for Paediatrics. Other centres for CF children were also set up, which offered full-range management, e.g., the Department of Gastroenterology and Metabolism in Poznań under the leadership of W. Cichy, M. Krawczyński, J. Walkowiak.

In 1990, the first international symposium on the diseases of the pancreas was held, and W. Cichy was one of the organisers. In 1992, owing to the efforts of W. Cichy and M. Witt, the Polish Cystic Fibrosis Working Group was reestablished after a few years' of inactivity, and the Group was led by W. Cichy (1992 - 1996). In cooperation with W. Creutzfeld, U.R. Fosch, P.G. Lankisch and R. Arnold, the study of the intestine-pancreas diseases was conducted (36 - 38). Other clinical centres which also provide a complex medical care to the CF children include those in Białystok, Łódź, Zabrze, Wrocław.

In The Children's Memorial Health Institute, major interests are focused on liver involvement with portal hypertension in cystic fibrosis patients. Complex clinical assessment in chronic pancreatitis has been developing in joint collaboration with the Institute of Mother and Child. In cooperation with the Institute, the first in Poland joint research has been initiated on establishing the genotype/phenotype association (evaluation of trypsinogen mutation, SPINK and CFTR) (J. Bal, B. Oralewska, J. Socha et al).

The various activities of different centers had an influence on publishing activities in polish and abroad publications and monographic titles (Table 3).

\textit{The history and activity of the Polish Society for Paediatric Gastroenterology, Hepatology and Nutrition}

The Polish Society for Paediatric Gastroenterology, Hepatology and Nutrition emerged from a former Section of Gastroenterology and Nutrition at the Polish Society for Paediatrics, which had been initiated by Tadeusz Zalewski, the founder of Polish Gastroenterology. Zalewski and Socha succeeded in setting up the Section at the Paediatric Congress in Poznań in 1979. Over the years, the Section was developing, first, under the guidance of T. Zalewski, and since 1982, under M.Goncarzewicz, the President, and Zalewski and Socha, the Vice-
presidents. Subsequently, the guidance was passed to J. Socha who was followed by J.Ryżko. The Board’s inspiring role in scientific research resulted in founding paediatric gastroenterological departments, and a network of regional gastroenterological outpatient clinics in almost all the medical universities in Poland.

Assessment of achievements in the work of paediatric gastroenterologists was carried out at annual gastroenterological symposia held at the Child Health Centre, Warsaw, medical centres in Bydgoszcz, Rzeszów, Łódź, Poznań, Białystok, Zabrze, Wrocław, as well as at gastroenterological seminars, at paediatric conferences and congresses in Warsaw, Cracow, Gdańsk, Białystok and Wrocław. Apart from those, an increasingly greater number of our colleagues participated actively in international meetings such as ESPGAN, ESPEN, UEGW.

In 1991, a further step was made in the development of Polish gastroenterology. Working groups were created in the fields of endoscopy, coeliac disease, hepatology, nutrition, functional disorders, allergic diseases, nonspecific enteritis, and they were responsible for managing the appropriate subspecialty problems. Therefore the diagnostic and therapeutic measures were standarised in

<table>
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<tr>
<th>Author</th>
<th>Title</th>
<th>Year</th>
<th>Publisher</th>
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<tbody>
<tr>
<td>K. Bożkowa, S. Witkowska</td>
<td>Żywienie dzieci chorych</td>
<td>1969</td>
<td>PZWL, Warszawa</td>
</tr>
<tr>
<td>B. Górnicki</td>
<td>Żywienie dzieci zdrowych i chorych</td>
<td>1971</td>
<td>PZWL, Warszawa</td>
</tr>
<tr>
<td>W. Szotowa</td>
<td>Growth and nutrition of small for date infants</td>
<td>1977</td>
<td>PZWL, Warszawa</td>
</tr>
<tr>
<td>T. Załęski</td>
<td>Choroby przewodu pokarmowego u dzieci</td>
<td>1985</td>
<td>PZWL, Warszawa</td>
</tr>
<tr>
<td>J. Socha</td>
<td>Dziecko z celiakią w rodzinie polskiej</td>
<td>1991</td>
<td>TPD, Warszawa</td>
</tr>
<tr>
<td>J. Socha</td>
<td>Choroby wątroby i dróg żołąciowych u dzieci</td>
<td>1994</td>
<td>PZWL, Warszawa</td>
</tr>
<tr>
<td>J. Socha</td>
<td>Żywienie dzieci zdrowych i chorych</td>
<td>1998</td>
<td>PZWL, Warszawa</td>
</tr>
<tr>
<td>J. Socha</td>
<td>Gastroenterologia praktyczna</td>
<td>1999</td>
<td>PZWL, Warszawa</td>
</tr>
<tr>
<td>J. Socha, J. Ryżko</td>
<td>Kazuistyka gastrologiczna u dzieci</td>
<td>2001</td>
<td>PZWL, Warszawa</td>
</tr>
<tr>
<td>J. Dzieniszewski, L. Szponar, B. Szczygieł, J. Socha</td>
<td>Żywienie w szpitalu</td>
<td>2001</td>
<td>Borgis, Warszawa</td>
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</table>
all the paediatric centres in Poland. We have received valuable assistance and support from adult gastroenterologists who provided clinical instruction for paediatricians, and who also invited the latter to participate in joint projects and research programmes.

Our colleagues’ activities were duly appreciated and, as a result, J. Socha, and later on, M. Kaczmarski, M. Czerwionka-Szaflarska, F. Iwańczak were appointed members of the Board of the Polish Society for Gastroenterology. Also, other paediatricians became members of regional branches of the Society. In 1998, M. Czerwionka-Szaflarska was the first paediatrician invited to organize the PSG Congress.

Owing to long-term efforts made by consecutive Section Boards, paediatric training and certified examination in paediatric gastroenterology were introduced. This was due to substantial support given by E. Butruk and A. Nowak, National Consultant Gastroenterologists. Following that innovation, up to 2000, 18 paediatricians obtained their specialty degrees in gastroenterology. Concern expressed about the speciality training for our colleagues combined with the necessity of advocating the needs of children with gastroenterological conditions, has generated an impulse to set up an autonomous society, which had been a long-time idea fostered by T. Zalewski. The initiative was accepted at the meeting of the extended Board of the Paediatric Section. The efforts to establish the Polish Society for Paediatric Gastroenterology, Hepatology, and Nutrition (PSPGHAN) were consistently supported by W. Romańczuk, who wrote the statute and made substantial attempts for the Society to be registered by law.

The key objectives of the Polish Society for Paediatric Gastroenterology, Hepatology and Nutrition are as follows:
1. to disseminate the knowledge of paediatric gastroenterology, hepatology and nutrition,
2. to participate in the development of programmes focusing on the provision of the ultimate health care for patients with gastrointestinal disorders and diseases,
3. to raise the level of research and professional qualifications of paediatricians, particularly in the field of paediatric gastroenterology,
4. to introduce and to maintain high standards of professional ethics and duties,
5. to represent and defend the vital interests of all the Polish paediatricians managing children with gastrointestinal disorders and diseases,
6. to cooperate with international medical centres in the field of paediatric gastroenterology and nutrition.

At the inaugural meeting of the members of the Society held on 22nd October, 1998 in Wroclaw, the activity of the Paediatric Section of the Polish Society for Gastroenterology and Nutrition was declared ceased, and simultaneously, the activity of the Polish Society for Paediatric Gastroenterology, Hepatology and Nutrition was declared commenced. The name and the range of activities of the Society are compatible with those of the European Society for Paediatric
Gastroenterology, Hepatology and Nutrition. Jerzy Socha was elected the first President of the Society Board. Considering his enormous contribution to the initiation and development of paediatric gastroenterology in Poland, Tadeusz Zalewski was unanimously elected the Honorary President of the Society. Over two hundred paediatricians applied for membership.

In accordance with the statutory rules, Section heads were elected:
- Endoscopy Section - D. Celińska-Cedro (Iwona Ignyś since 2000);
- Coeliac Disease Section - A. Radzikowski (K. Karczewska since 2002);
- Functional Disorders Section - K. Fyderek;
- Allergic Diseases Section - M. Czerwionka-Szafarska (K. Wąsowska-Królikowska since 2002);
- Hepatology Section - J. Socha (J. Pawłowska since 2002);
- Nutrition Section - Janusz Książyk;
- IBD Section - Krystyna Grzybowska. In February 2000, the Board members decided to set up Acute Diarrhoea Section which has since been headed by J. Mrukowicz.

The Society publishes its own magazine i.e., a quarterly journal, *Pediatria Współczesna. Gastroenterologia, Hepatologia i Żywienie Dziecka* (Modern Paediatrics. Gastroenterology, Hepatology and Nutrition in Children); T. Zalewski is the editor-in-chief.

The most important scientific event in the history of both the Section and the Society was the 32nd Annual Meeting of ESPGHAN held from 2nd-5th June, 1999 in Warsaw. The participants were the most prominent representatives of the world paediatric gastroenterology. The meeting was an expression of recognition for the activities of our colleagues in the Society, particularly for the significant contribution of T. Zalewski and H. Szajewska.

Since its beginning, the PPSGHAN held two congresses: one in 2000, Łódź, organised by Izabela Planeta-Malecka and her co-workers, the other one in 2002, Bydgoszcz, organised by M. Czerwionka-Szafarska and co-workers. Apart from that, symposia are held within particular problem Sections. Our colleagues present their papers at gastroenterological sessions at the Polish Paediatric Society and at congresses of the Polish Gastroenterological Society.

The number of members has increased to 240, and over 40 members has been certified as paediatric gastroenterologists. In recognition of our colleagues’ contribution, K. Wąsowska-Królikowska has been elected President of the Polish Paediatric Society. For the last two terms, two paediatricians, M. Czerwionka-Szafarska and F. Iwańczak, have been members of the General Board of the Polish Society for Gastroenterology.

*European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPHGAN).*

The number of ESPGHAN members has increased (K. Fyderek, I. Jankowska, J. Książyk, J. Mrukowicz, J. Pawłowska, A. Radzikowski, J. Socha, P. Socha, H. Szajewska, J. Walkowiak, M. Woynarowski, T. Zalewski). A momentous event was the 32nd Annual Meeting of ESPGHAN held in Warsaw in 1999. Polish
gastroenterologists are increasingly active and present their papers at ESPGHAN, which accounts for approximately 50% of those submitted by other Central European Centres.

A. Radzikowski and H. Szajewska were ESPGHAN Board members in 1991-1993 and 1999-2000 respectively.

In cooperation with ESPGHAN, The Children’s Memorial Health Institute organised the Nutrition School in 1992, and the Travelling Summer School (Białystok, 1994, Jabłonna, 1997). H. Szajewska has been a member of the Human Nutrition Committee at ESPGHAN since 2002, and the Committee Secretary since 2003.

Other Research Societies

Paediatricians participate in the work of the Polish Society for Gastroenterologists, by being members of the Board. We also participate in the activities of the Polish Association for the Study of the Liver in organising symposia, editing the *Hepatology* volumes of Medical Science Review and working as the Board members (J. Pawłowska, J. Socha). Research and educational activity on parenteral and gastrointestinal nutrition have been developing within the framework of the Polish Society (J. Książyek and M. Łyszkowska, respective Board members) as well as within the European Society (ESPEN). Moreover, we closely cooperate with the Committee for Human Nutrition at the Polish Academy of Sciences; Jerzy Socha has been the Chairman of the Commission for Children and Adolescent Nutrition since 1996.

Paediatricians working with children after liver transplantation are members of Polish Transplantation Society and International Pediatric Transplant Association.

Research Funding

As a rule, in Poland, research funding is provided through nongovernmental nonprofit organizations such as the Foundation for Polish Science. Pharmaceutical and food companies (Ovita -Nutricia, Gerber, Danone Foundations) support our research by grants, and education, by organising schools, not only in university centres. Theoretically, the European Union grants are also available. At present, we are participants in the Fifth Framework Programme, CHOPIN - Childhood Obesity Programming for Infant Nutrition coordinated by B. Koletzko (Germany) and J. Socha (Poland). In cooperation with the UE, the Children’s Memorial Health Institute is implementing the PERFECT Programme (Paediatric Research Centre - Focusing on Effective Child Treatment) (E. Pronicka); a symposium on "Malnutrition" will be held in 2004 (J. Socha), workshops on "Cholestasis in Children" (J. Pawłowska) and "Wilson Disease and Liver Steatosis" (P. Socha).
In order to improve the quality of our research, since 1999, in cooperation with the Ovita-Nutricia Foundation, we have organised three training courses on Good Medical Practice and about 200 participants were provided the instruction.

**Hepatology**

Hepatology has emerged as a very important and dynamic discipline during the latter half of the 20th century.

Viral hepatitis was found to be an important epidemiological problem in Poland. Epidemiological surveys showed an increasing number of new HBV infections in the last quarter of the 20th century. The incidence was especially high in the youngest group of children, reaching over 100 cases per 100 thousands inhabitants. Most of those were nosocomial infections. In the 1960s liver diseases in children were mostly treated at the infectious diseases departments. The introduction of HBsAg and other viral markers testing helped diagnose HBV infected patients.

Another diagnostic tool that became available, was liver biopsy. One of the first centers that performed the needle liver biopsy in pediatric patients was in Wroclaw (Z. Rudkowski). He and J. Gruszka had been awarded in 1999 during Falk Liver Week in Bazylea on their study on 686 liver biopsies in children.

Liver biopsy was popularised in the early nineties, and the number of procedures rapidly increased to several hundred annually. In the late nineties, liver biopsy was performed in almost 30 paediatric hospitals in Poland.

In the eighties, the first treatment approaches to HBV infection were TFX or short-term steroid therapy. They were neither very successful nor widely used. The situation changed with the introduction of interferon alfa. The first group of children received interferon at The Children’s Memorial Health Institute in 1990. The data published for this group showed a very high seroconversion rate, which was probably biased by a low number of patients and selection of children with a very high inflammatory activity. This small study however showed that interferon therapy could be tolerated by paediatric patients which encouraged other centres to administer the interferon treatment to their patients. The treatment became popular when the Ministry of Health initiated a national programme for HBV treatment and provided the interferon therapy for children with HBV infection. The programme started in 1993, and was co-ordinated by The Children’s Memorial Health Institut. The number of centres included in the programme increased from 7 in 1993 to 28 in 2000. Over 3000 children with HBV received the treatment, and the results were published as a multicenter collaborative study in 1997 (39).

The Polish experience with the interferon treatment of HBV infection was presented at international meetings, and three Polish centres were invited to participate in an international multicenter study on the efficacy of lamivudine in patients with HBV infection. The results of the study were published in New

Interferon and lamivudine were the treatment options for HBV infected patients; they could inhibit viral replication, but they had minimal impact on the epidemiology of the disease. Introduction of universal vaccination programme was advocated by paediatricians from the early nineties. However programme was delayed by epidemiologists who decided that the financial resources should be used to improve hospital hygiene and sterilisation standards. Finally, the programme started in selected regions in 1994 and in all country in 1996. The vaccination programme proved to be extremely effective, and it seems that HBV infection will soon disappear from the paediatric population (41).

In Wroclaw several study on immunogenetics of infection diseases also on influence of genetic factors and clinical manifestation of HBV infection in children had been held (42 - 45).

In Medical University of Bialystok evaluation of liver fibrosis in children with chronic hepatitis B was performed (including morphological liver biopsy examination and serum fibrosis markers level (TIMP-1, tenasin, collagen type IV and VI, hyaluronic acid, MMP-2, MMP-9/TIMP-1 complex, laminin-2, PIIINP, TGF β1). Laminin-2 and hyaluronic acid were found to be the most useful serum fibrosis markers because they had positive correlation with fibrosis stage and most efficiently differentiated fibrosis stage in morphological examination, and were characterised by the highest specificity (laminin-2) and sensitivity (hyaluronic acid). However the assessment of serum fibrosis markers concentration panel can not replace liver biopsy examination but it can be helpful in determination of invasive liver biopsy frequency in children with chronic HBV infection (46, 47).

HCV infection as epidemiological problem has been recognised since the beginning of nineties. The study on the hepatitis C virus genotypes were performed (48). Polish centres were one of the first to publish the results of combined interferon plus ribavirin therapy showing 70% efficacy of combined treatment versus 36% in monotherapy groups (49). High costs of therapy caused that it is used infrequently and very limited number of patients has been treated. The growing awareness of the problem and improvement of hospital hygiene decreased the number of cases but not to such extent as it was observed in HBV infection.

There had been observed the increased number of HBV-HCV co-infection in children, mainly as a consequence of HCV superinfection in children with chronic hepatitis B. Spontaneous HBe/anti-HBe seroconversion and HBV-DNA serum disappearance was detected more often in children with chronic B hepatitis HCV-superinfected. The study held in Bydgoszcz showed that superinfection in children with chronic HBV changed serum concentration of some immunological markers (50, 51).
Autoimmune hepatitis is the third most frequent etiology of chronic hepatitis in Poland. Although the incidence is much lower than the incidence of viral hepatitis the it has much greater morbidity and the prognosis is unfavourable. These patients have been referred to Child Health Centre from the end of eighties what allowed to collect the biggest group of patients in the world and to improve the outcome of the disease (52).

Unfortunately, the majority of children with chronic and lifethreatening hepatic failure develop features of liver disease in early infancy. Among them there are patients with extrahepatic (biliary atresia) or intrahepatic cholestasis. Until 1959, the pioneer operation performed by Morio Kasai - biliary atresia had seemed to be a non-correctable disease with a mortality of 95% in children under the age of two years. The first portoenterostomy in Poland was done by Shigeru Kimura and Zygmund Kaliciński in 1973. In the last 30 years hundreds of children had been operated (mainly in The Children’s Memorial Health Institute). In spite of the successful operative treatment, still a large proportion of children developed hepatic fibrosis or ascending cholangitis leading to cholestatic cirrhosis, which required liver transplantation. Since 2001 The Children’s Memorial Health Institute participate in European Biliary Atresia Registry (EBAR).

Over years there has been rapid development in molecular biology, which has led to the identification of genetic or congenital disorders presenting as neonatal hepatitis.

The Polish study play an important role in the identifying the role of alpha-1-antitrypsin deficiency (PiZZ) as a genetic factor associated with a particular severe form of the syndrome leading to cirrhosis (53). A multicentre population based study were conducted among Polish patients.

Progressive familial intrahepatic cholestasis (PFIC) are a group of inherited disorders with severe cholestatic liver disease from early infancy. Owing to the cooperation of The Department of Paediatrics, University College London Medical School and the Neurogenetics Laboratory in UCSF, San Francisco California, the phenotype of the disease was assessed in 43 children. The largest group PFIC 2 patients (loci on chromosome 2q) was identified among Polish children (54, 55). The cooperation with Peter Whittington (Chicago, USA) resulted in the introduction of a new surgical technique (partial external biliary diversion), in the treatment of PFIC patients. The results were published in Pediatric Transplantation 1999 and Pediatric Surgery 2003 (56, 57).

Alagille’s syndrome characterised by paucity of interlobular bile ducts usually occurs in association with a range of cardiovascular, skeletal and ocular abnormalities. One of the largest groups of patients reported in literature was described in the first edition of Hepatologia Polska in 1994 (58).

In the same issue, the first two cases of Aagenaes syndrome in Poland were described, out of fewer than 50 cases ever reported in world literature (59). Genetic testing confirmed the patients’ Scandinavian origin.
Several studies on nutritional aspects, i.e., lipids metabolism, vitamin deficiency and immunonutrition had been performed in cholestatic patients (60 - 63).

Recently new methods for diagnosis of Wilson’s disease in children have been introduced (liver copper, genetic studies) in cooperation with the Institute for Psychiatry and Neurology in Warsaw. Medical standards for diagnosis of Wilson’s disease have been established (including ceruloplasmin, urinary copper, liver copper and genetics) and further cooperation with European centers to assess diagnostic and treatment procedures will be based on the EU VI framework project ‘EUROCOPPER’ in which The Children’s Memorial Health Institute is one of the major European partners. Increasing interest to Wilson’s disease and improved diagnostic procedures resulted with a bigger number of pediatric patients diagnosed and treated in recent years. Postgraduate educational activity was a good basis for academic collaboration between different centers in Poland and ceruloplasmin alone is no longer regarded to be solely a diagnostic test for Wilson’s disease.

Fatty liver seems to be a major liver problem in adults and it is also recognized more often in children diagnostic procedures to differentiate viral (HCV), specific metabolic and obesity related steatosis have been established and further research has been started. Although evidence for specific pharmacologic therapy is still weak in obesity related and unknown origin fatty liver, some treatment standards have been suggested and they will be investigated.

Portal hypertension associated with the development of oesophageal varices is a direct life-threatening condition due to the risk of haemorrhage. The studies focused on direct causes of bleeding from oesophageal varices and preventive methods. Prognostic factors in portal hypertension were assessed (64). The presence of ascites and endoscopic signs of high risk of bleeding (cherry red spots and red wale markings) showed the greatest impact on the frequency of occurrence of bleeding and mortality. Prevention of recurrent bleeding from oesophageal varices consisted in the introduction of endoscopic techniques. Initially, endoscopic sclerotherapy was employed, which, since 1997, was subsequently followed by endoscopic variceal ligation (EVL). Assessment of the two therapeutic techniques shows higher efficacy of EVL than that of the sclerotherapy, and is also less expensive. The EVL efficacy was also evaluated in preventing haemorrhage in patients without a previous history of bleeding. The procedure was performed in a group of 37 children, and proved to be efficacious and safe (65).

Reduction in the number of blood exchange transfusion procedures in neonates by portal vein catheterization decreased the percentage of new cases of portal vein thrombosis. Increased efficacy in the treatment of HBV reduced the number of patients with portal hypertension in the course of postinjection liver cirrhosis. The progress in transplantology shows that in patients with hepatic
cirrhosis, liver transplantation is more frequently performed before they develop symptoms of liver failure associated with oesophageal varices.

In the late 1980’s a multidisciplinary team was trained to start a liver transplantation program in children. The first successful liver transplantation in Poland was performed on 1st March 1990 at the Children’s Memorial Health Institute in a three years old girl with cholestatic liver disease. After the first difficult years, since 1998 after the introduction of living related liver transplantation with the cooperation of Y. Revillion and F. Lacaille, the programme expanded. Till now 187 liver transplantation had been performed among them 68 living related and 8 combined (liver and kidney).

Nutrition

In the Mother and Child Institute, founded in 1948, the Child Nutrition Unit was set up (S. Witkowska, later, Z. Wacznik), and in 1961, the Department of Nutritional Physiology was established (E. Litwin). The nutritional team, including both the departmental and laboratory staff, was headed by Górnicki until 1971. In 1963, the team developed an outline of artificial feeding of neonates (A. Krukowa, Z. Kowalczyk, Z. Dzieniszewska, H. Kleczkowska) which was regularly revised and modified according to changes in nutritional trends. Over the years, the consecutive heads were W. Szotowa, Z. Rudzka-Kantoch, H. Weber. From 1997 to 2003 they developed dietary requirements for postinfancy babies and preschool children, pregnant women and breast-feeding mothers, and nutritional guidelines for Health Care Centres. In 1967, a metabolic diseases outpatient clinic, managing also food allergy and food intolerance, was transformed into a gastroenterological clinic, and since then it has been a referral centre in the area of gastroenterology and nutritional counselling. In 1996, the Department for Promotion of Breastfeeding was established, and has been headed by M. Kostyra.

D. Fedeczko from the Polish-American Children’s Hospital in Cracow was the first Polish physician to introduce parenteral nutrition in children in 1972 (66). As a continuation of the early work in nutrition, M. Sporadyk has developed a specific approach to malnourished children, particularly to burn patients, which is known as the Cracow Rule.

Owing to the close cooperation between the The Children’s Memorial Health Institute, the Polish Society for Paediatric Gastroenterology, Hepatology and Nutrition, Commission for Child and Adolescent Nutrition at the Polish Academy of Sciences, and the National Consultant, a substantial number of nutritional standards and recommendations have been developed for children with coeliac disease, food allergy, constipation.

Clinical and home parenteral nutrition has been introduced and implemented (J. Książyk and M. Łyszkowska) (67 - 69):
1984 - the beginning of clinical parenteral nutrition at the Department of Gastroenterology, IP-CZD; (so far about 200 patients have been nourished for the time period of over one month);

1990 - the beginning of home parenteral nutrition; since that time we have treated 110 patients (75% with short bowel syndrome, the remaining 25% included chronic diarrhoea, pseudoilieus, premature, Crohn’s disease, protein-losing enteropathy, intestinal polyposis

1992 - the multidisciplinary Nutritional Treatment Team (paediatricians, a surgeon, a pharmacist, a paediatric nurse, a dietician) was formed and affiliated with the Department of Gastroenterology, Hepatology and Nutrition until 30th June 2003, and starting from 1st July 2003, it has been attached to the Nutrition Unit at the Paediatric Department, IP-CZD;

1997 - establishing the Outpatient Clinic for Parenteral and Gastrointestinal Nutrition, which operated at the Department of Gastroenterology, Hepatology and Nutrition until 2001, and since 1st July 2003, it has been attached to the Nutrition Unit at the Paediatric Department, IP-CZD;

1998 - the Laboratory for Parenteral Nutrition was established at the Hospital Pharmacy, IP-CZD.

At present, 46 patients aged 6 months to 2 years, have been included into our programme of home parenteral nutrition. The mean time period of the nutrition course is eighteen months ( minimum 1 month, maximum 10 years).

Generally, the issue of nutrition is being developed in almost all the paediatric hospitals in Poland. It comprises healthy children nutrition, and nutritional prophylaxis in diet-related diseases such as obesity, diabetes mellitus, osteoporosis, allergy. Special attention has also been paid to the aspects of functional food, i.e., probiotics and prebiotics.

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