

## REVIEW

**Children in the focus of the attention of pediatricians and pediatric surgeons**

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**Children represent the future of humankind. They are the bridge to our immortality. They get the attention of everybody who wants to help and do something for them. It is a common interest of pediatricians and pediatric surgeons to provide ill children with almost care. In the context of historic development of medicine, the author focuses her attention on the development of pediatric and surgical care of children with the emphasis given to the care of critically ill children suffering from inborn heart defects. The author uses the example of co-operation of pediatric cardiologists and cardiothoracic surgeons as the base for her reflections of ethical principles, norms and attitudes to the implementation of modern surgical techniques in the treatment of newborn babies suffering from the syndrome of left-heart hypoplasia. The history of child-care in general and especially that dedicated to newborn babies suffering from inborn heart defects in Slovakia is associated with the personality of Professor Siman, a significant Slovak cardiothoracic surgeon.**

*Dedicated to the 70th birthday of Professor Jaroslav Siman, MD, PhD.*

*Motto: Humanity is the dimension of the heart. It represents space and time.*

The children are the future of humankind. They are the bridge to our immortality. They get the attention of everybody who wants to help and do something for them. In this effort, the pediatricians have both, great possibilities just as well as duties, not only during the disease, but mostly in its prevention. In this sense there is no difference between pediatricians and surgeons, let alone between pediatricians and pediatric surgeons. It is our common interest to provide ill children with utmost care. In everyday routine, this means to be armed with knowledge and skills and to work with wisdom and feeling. However, this has not always been true and even now there are some parts of the world where children are still not getting sufficient attention.

Naturally, should we inspect the far history of both medical branches, surgery (in the past referred to as wound-healing) represents the most ancient branch of medicine as such. Despite the fact that these both branches have been directly associated with the development of man, the real interest in child-care has always been significantly lagging behind the development of surgery.

The first written document dealing with surgery as a medical branch comes from ancient Egypt. It is called after its discoverer – The Papyrus of Edwin Smith. This papyrus appears to have

been based on a book written in the period of about 3000 years BC. Already this ancient work contains recommendations of how to heal wounds, fractures, perform castrations, or remove tumours, etc. Surgery was well developed also in ancient India. There is evidence that abdominal operations were performed there (11). Hippocrates has described the treatment of haemorrhoids and the ways of stopping the bleeding. Asclepius has described tracheotomy, etc. The work of one of the most significant Roman physicians Claudius Galenus had become the source of knowledge in the forthcoming period of 1000 years. Despite the fact that the medieval ages were characteristic by the establishment and development of universities especially in central Europe, they did not bring great progress in the development of surgery. From the aspect of general development of medicine, it is necessary to mention the discovery of blood circulation.

The position of children in far, as well as near history has been subdued to many changes. The reports on child-care are very old too – they come from the period of about 2000 years BC. However on the other hand there was the practice of ancient Spartans who allowed only physically fit and well developed individuals to survive. In the forthcoming periods it were mostly the parents whose command the fate of the child depended on as

the child represented their possession and they were allowed to treat it wilfully (6). The position of newborn babies was even worse. Despite the fact that the first written evidence of care dedicated to newborn babies is documented in an antic monograph of practical gynaecology written by a Greek obstetrician Soranos from Efez (98–138 AD) in his work “*De Arte Obstetrica Morbi Mulierum*”, still tens of centuries had to lapse away until a real breakthrough took place in the conception of care of both, physical as well as mental health of children.

As early as in the 17th century, Jan Amos Komenský suggested that: “the soul and thus the mind being a part of a human being, should be before all else treated in order it to become noble.” Yet, in the 1920’s, some pediatricians did not deem mental health to be a part of health and alleged that it was sufficient for a suckling baby to be properly nursed and then left alone (8).

New trends and discoveries in the 18th and 19th centuries enabled surgery as well as pediatrics to thrive. In the 19th century, first pediatric hospitals were gradually founded, the fact of which represented a qualitative breakthrough in child-care. At that time, 200 years ago, for the first time in history, an idea was implemented that children were to be treated among other children with whom they had equal developmental interests and they should not be admitted to adult hospital wards. Hence, this is one of the 10 rights of a hospitalised child included into the “Charter of Hospitalised Child’s Rights” adopted in 1988 and presented in the „Declaration of Child Rights“ developed by UNO in co-operation with UNICEF.

The first pediatric hospital was established in Paris in 1802, in Prague in 1542, in Brno in 1846 and in Bratislava in 1853. Already at that time a large part of beds was secluded for surgical diseases. In 1894, the pediatric hospital was finally settled in today’s Lazaretska street, and when opened, it already had an operating room where hernias, appendicitis and lip, gums and palate clefts were operated.

In 1919, after the establishment of the Medical Faculty of Comenius University (MF CU), new clinics were established that became the centres of surgery and pediatric development (7). In 1953, together with the formation of the pediatric branch at MF CU, the first Czechoslovak Pediatric Surgery Clinic was formed. This can be considered as the beginning of real and sensible symbiosis of pediatrics and pediatric surgery in Slovakia.

In the 20th century, an explosion of technical progress took place in pediatrics as well as in surgery, enabling to implement new medical procedures and modern technologies. This situation logically evoked lively discussions and polemics on many controversial and currently very sensitive questions that were focused especially on ethical principles and norms of common pediatric and surgical care of our patients. Professor Siman, an excellent surgeon who not only owing to his inborn talent, but also in result of his hard studies at the Anatomic Institute of MF CU became a surgeon with wide expertise especially in cardiosurgery.

I, being a pediatrician specialised in pediatric cardiology have lived my professional life at the ward for critically ill newborn babies and have become a faithful colleague of Professor Siman and vice-versa. A wonderful desire to help the children suffering

from critical inborn heart defects has brought us together and has become our fate. Gradually it became our “matter of heart”. The beginnings of our co-operation at the First Pediatric Clinic in 1970’s were very hard. However we were extremely lucky too (1). We had the advantage to base the diagnosis and treatment of heart defects in children on the first experience of Doctor Formanek. Owing to him, after his return from a one-year stay in the USA in 1967, the technique of diagnostic catheterizations, especially that of angiography thrived. Doctor Formanek performed catheterizations via the femoral vein. The first catheterizations were performed in suckling babies and it was Doctor Formanek who as the first Czechoslovak surgeon performed selective coronarographies (4). The first balloon atrioseptostomy was performed in a newborn baby suffering from transposition of large vessels. I, as a new faculty graduate could witness his performance, unfortunately though only until the august of 1968, when Doctor Formanek (with many other colleagues) left for the USA (at this time however for a 25-year stay).

Despite great difficulties we worked further and made the best account of his first experience, however especially of his enthusiasm, joy from everyday work and atmosphere of mutual faith, gratuitous friendship, together with expertise and self-discipline that he handed down to us. Even now it is possible to say that we are still gaining our mental strength from that period.

Professor Siman, at that time a medical graduate, became a dignified disciple of this path, especially in diagnostic catheterization in critical newborn babies and sucklings. As he puts it: “no patient was released from the operating table before the diagnosis had been stated, everybody felt joy from work, nobody felt tired, nobody was thinking of how much radiation he was exposed to” (9). At this instant there was no difference between surgeons, cardiologists or radiologists – all of them were diagnosticians having the same goal.

Unfortunately we had to go through many sad situations when babies with critical diseases were brought late for help, in bad state, when even fast and successful diagnostic procedures (catheterization, angiocardiology and balloon atrioseptostomy) did not reverse the poor prognosis. On the other hand however, in cases of successful palliative interventions, we all felt an unrepeatable joy from at least temporary victory over the dread disease that had seized both the ill child and us until the definite successful operation could take place. This period up to the complete correction of heart defect that can be referred to as a „transient period“ was then very difficult, not only for the child and its family, but also for us pediatricians and surgeons. And this was the right time and space to come to know whether real partnership and equal relationships were formed as well as to learn about the particular degrees of personal ethical norms of each participant.

In this sense, pediatric cardiology is a typical phenomenon, the paradigm of ethics applied in medicine by pediatric cardiologists.

When faced with an ethical dilemma we always consider 4 basic principles:

- Autonomy – the principle of respecting the personality
- Right – the principle allowing some so-called “injustice”

unless it decreases the freedom of any individual, and when considered to be beneficial for the society as a whole.

– Benefaction – the Samaritan principle that means to do everything for the good of other people, especially in medicine.

– The Hippocrates' principle of never harming anyone: "Primum non nocere".

In 1980's, when new therapeutic techniques appeared on the horizon of pediatric cardiosurgery, it was not a surprise that critical voices full of scepticism and fears appeared that did not believe in their surgical results. The reasoning of Professor Sondheimer, pediatric cardiologist in coincidence with the Norwood palliative operation serves as an example of ethical considerations about new surgical techniques in the operation of hypoplastic left-heart syndrome of that time (10). In this coincidence, Professor Sondheimer described the position of pediatric cardiologists – practitioners of these surgical procedures, which he referred to as experimental operations. Up to then, that is to say, it was believed that this syndrome basically representing aortal atresia was inoperable. Everything changed when Norwood and his co-workers published the first phase of their operation with encouraging results. Then an interesting phenomenon took place. During some years, many surgeons were not able to repeat these results and cardiologists became confused. Was it right to encourage their colleagues to go on with operations, or should they send the patients to the centres having acceptable results, or very likely to return to the original position and not to recommend surgical interventions in patients suffering from this inborn heart defect. It is a real dilemma for a practitioner since it is him who is believed by his patients. Should they be sceptical in coincidence with expectations of surgical results or have they the right not to recommend the operation. When does the operation become experimental? Some surgeons in Boston and Philadelphia considered the Norwood's operation as a routine procedure in cases of aortal atresia. Therefore, firstly, the answer to these questions should be that despite the fact that the operation is a routine procedure in several centres, it is experimental in the majority of centres. Secondly, despite the fact that the Norwood's procedure represented the only surgical option, the definite option is to be chosen by parents influenced by the cardiologist.

At the same time in addition to other issues, the cardiologists should consider the advantage of operation performed primarily in centres with excellent results. They should reflect this operation in the same way as their predecessors reflected the operations of Blalock, Gross or Baffes. Experimental operations are precious and meritorious. In situations of fatal prognoses and when no other surgical technique with reproducible excellent results has been presented, the cardiologist should explain the problem to the family and to stimulate them, give them courage to participate in the research of this fatal disease. And this was true not only in 1980's! The application of this principle has brought success also under our conditions at our Pediatric Cardiocentre where the syndrome of left-ventricular hypoplasia is solved surgically.

Even among the surgeons, each new method evokes a whole range of various reactions. The group that has performed the

particular intervention is full of enthusiasm and interested in maintaining its own uniqueness in coincidence with the particular procedure. The other group represented by other clinics dealing with a similar problem is partially sceptical in coincidence with the particular method, however attempting to take it over. Another group can be characterised as the protectors of the ethical aspect of medical progress. We could still speak about many other aspects. However, one thing is for sure, the decision of surgeons or pediatricians is influenced by the height of their personal ethical norms given by their upbringing and their degree of education and character.

It is natural, that we – the physicians, during the whole of our lives deal with the rule of respecting the ethical principles in the difficult process of diagnosis and therapy of critical heart diseases. Gradually though, the management of sophisticated medical techniques helped us in our decisions in respect of difficult heart defects especially in newborn babies. At the beginning of 1980's, the diagnoses became more precise and faster by using the echocardiographic device at the First Pediatric Clinic. We were the first Czechoslovak surgeons to report a case of balloon atrioseptostomy in a newborn baby performed under echocardiographic control (2). This was a breakthrough in the treatment of newborns with transposition of large vessels. Later we managed to influence pharmacologically the enclosure of the arterial duct in prematurely born children, or its opening in babies with critical heart defects depending on an open arterial duct. And in this way, gradually we have physically replaced the surgeons in coincidence with palliative and later with definitive invasive operations of inborn heart defects. Surely, our cardiosurgeons, including Professor Siman, were not happy with this. On the second hand however, Professor Siman gained the possibility to dedicate all his strength to surgical solutions of complicated heart defects with or without extracorporeal circulation and to hand over his precious experience to his successors. He became, together with his tutor Professor Šimkovic the most significant personalities in pediatric cardiosurgery in Slovakia.

The development of child-care in coincidence with inborn heart defects however is in its progress, and concentrates especially on the improvement of post-operative intensive care. Its rapid development is associated with the progress in the field of appropriate cardiopulmonary support, in new strategies of mechanical ventilations and use of nitrogen oxide, as well as in the field of physiology of one-ventricular circulation study. On the other hand it is tightly bond with new trends in interventional catheterization of the heart and with new techniques in pediatric cardiosurgery (5).

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