

## Recent Topics from the Japan Society of Perinatal and Neonatal Medicine

JMAJ 54(2): 123–126, 2011

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The perinatal period is thought to be the highest risk for human death (fetal or neonatal death). The high level of medical care in this period means the high level of medical care as a whole in that country, and thus perinatal mortality has been used as an index when comparing the level of medical care among different countries throughout the world. It is noteworthy that perinatal mortality in Japan has remained at the highest level in the world since the middle of the 1980s. In order to maintain and further to improve this level of medical care, the previous Japan Society of Neonatology became the Japan Society of Perinatal and Neonatal Medicine in July 2004 and currently has more than six thousand members.

### History of the Society's Foundation

Formerly, the Japan Society of Neonatology (established in 1965) and the Japan Society for Premature and Newborn Medicine (established in 1958) served as academic societies that dealt professionally with maternal, fetal, and neonatal medicine.

As the idea of treating the fetus and the neonate as an individual continuum, rather than segregating them in terms of their prenatal or postnatal status, became more common, “perinatal medicine” has come to represent the area of medical science that addresses the medical and biological issues of mothers and children in relation to pregnancy and delivery. Together with the academic recognition of this concept, an atmosphere conducive to the founding of an academic society of experts in this field and hold-

ing relevant academic meetings arose worldwide in the late 1960s. Because there was a need for an appropriate organization that would respond to this movement in Japan, the Japanese Society of Perinatal Medicine was established in 1983.

On the other hand, the Japan Society of Neonatology also progressed from neonatology alone to a wider field of perinatal medicine following the introduction of the concept of perinatal medicine. As a result, these two academic societies overlapped in the same time series, and were combined to form a new “Japan Society of Perinatal and Neonatal Medicine,” which inherited the central role in perinatal medicine in Japan.

### Recent Topics

In the context of the aforementioned history, our Society consists of various different specialized areas including maternal and fetal medicine, neonatology, neonatal surgery, perinatal anesthesiology, and perinatal pathology. We would like to introduce recent topics related to the principal fields of this Society.

#### Maternal and fetal medicine

This area covers a considerably wide range of issues such as complicated pregnancy, obstetric complications, fetal diagnosis and treatment, and maternal emergencies. In particular, the complicated pregnancy has a connection with drug use, and form both age-old and contemporary issues. The topic is “pregnancy and confusion of antithyroid drugs” in the following.

Graves' disease is a frequent medical com-

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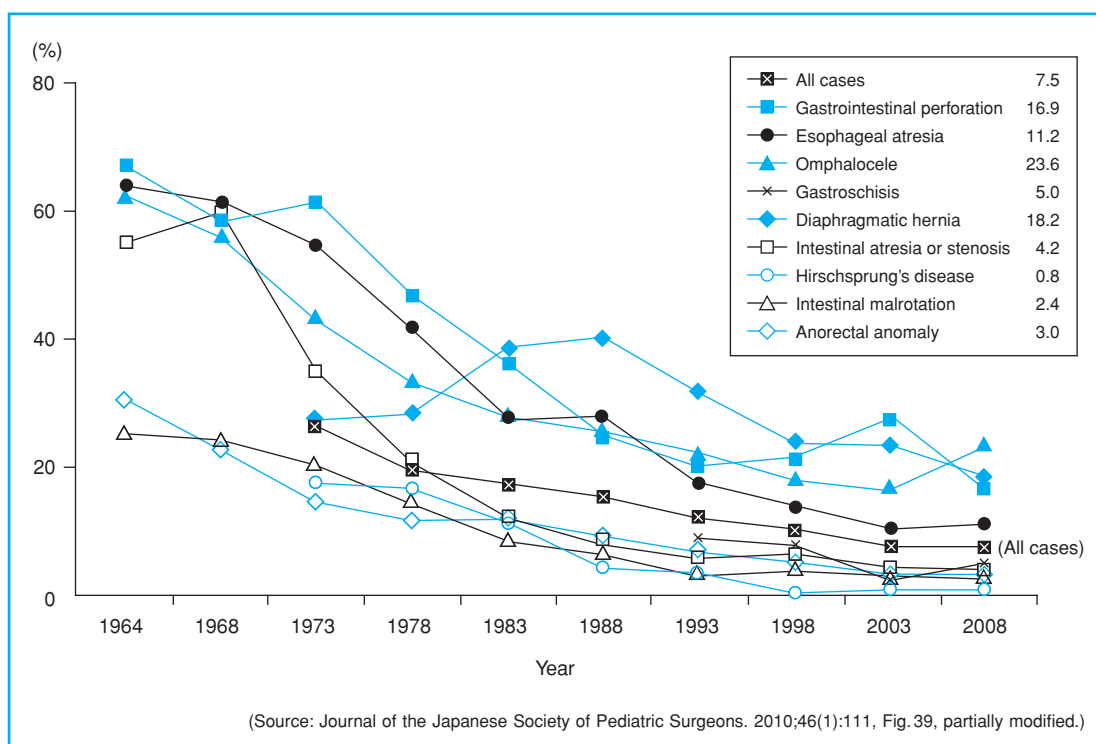
plication that occurs in pregnant women, and has been dealt with under a generally consistent view. More specifically, propylthiouracil (PTU) is considered to be desirable in pregnant and puerperant women with this disease. Methimazole (MMI) is another antithyroid drug that has frequently been used in Japan. A randomized controlled trial comparing these two drugs was carried out in Japan, and demonstrated the superiority of MMI. This finding was confirmed by the American Thyroid Association, and MMI is currently regarded as the first-line drug. From the viewpoint of teratogenicity, although neither drug causes an increment to the general anomaly rate, a relation between the use of oral MMI by the 8th week of pregnancy and the development of scalp defect, choanal atresia, esophageal closure/tracheoesophageal fistula, etc., has been pointed out. Concerning this issue, the Ministry of Health, Labour and Welfare has been implementing a prospective study on the pregnancy outcomes of MMI administered in early pregnancy (the Pregnancy Outcomes of Exposure to Methimazole Study [POEM study]) since 2008.

On the other hand, from the viewpoint of adverse effects, serious hepatic damage associated with PTU has been reported by the FDA. PTU is superior to MMI in view of breast milk.

Thus, when attention is focused on efficacy and adverse effects, MMI is the antithyroid drug of first choice, but PTU is more advantageous in early pregnancy and in the period of lactation. We have to think whether such complicated treatments as MMI in non-pregnancy, followed by PTU in early pregnancy, MMI in mid and late pregnancy, PTU in the lactational period, and MMI in the end of puerperium are possible. It is desirable that such confusion in the use of antithyroid drugs in pregnant and puerperant women would be resolved early on.

### Neonatology

Patent ductus arteriosus of prematurity occurs in 70–80% of extremely low birth weight infants, and induces lung hemorrhage and intraventricular hemorrhage in them. The Medical Standards Committee of the Japan Society for Premature and Newborn Medicine developed and pub-



**Fig. 1 Changes in the mortality rates from neonatal surgical diseases in Japan**  
Numbers in the legend indicate the respective mortality rates in 2008.

lished guidelines for patent ductus arteriosus of prematurity. Neonatal pediatricians, pediatric cardiovascular specialists, clinical epidemiologists, and medical librarians in Japan, totaling 66 individuals, gathered via Internet (J-PreP). A questionnaire survey covering 120 domestic medical institutions was carried out, and clinical questions (CQs) concerning the prevention, diagnosis, and treatment of the disease were formulated. Medical librarians comprehensively and systematically collected 2,322 domestic and relevant overseas articles from databases, and registered the bibliographic information in a specific reference management database (SENJU) on the World Wide Web. High-quality studies matching respective CQs were selected, 114 articles were critically reviewed to compile structured abstracts, and draft recommendations for CQs were prepared under a scientific basis. For CQs that were lacking solutions supported by a high-quality scientific basis, organizational consolidation of opinions was attempted three times by the Delphi technique to eliminate regional differences and to incorporate the views of other professionals and patient families. Finally, opinions were invited via Internet, and a recommendation level was determined for 33 items. Aiming for the international standard, opinions from patient's families and comedical staff were taken into account when determining the recommendation level for every item. These recommendations are also planned to be open to the public through the medical information service "Minds (<http://minds.jcqh.or.jp>)" of the Japan Council for Quality Health Care.

### Neonatal surgery

The Japanese Society of Pediatric Surgeons has provided statistical data on the status of neonatal surgery practice in Japan according to 10 intermittent summations between 1965 and 2009 (Fig. 1). Whereas the mortality rates of gastrointestinal perforation, esophageal atresia, and omphalocele exceeded 60% 45 years ago, they have decreased to distinctly lower levels recently, notably less than 12% in cases of esophageal atresia. As for diaphragmatic hernia, the number of severe cases increased along with the spread of prenatal diagnosis, leading to a temporary paradoxical increase in the mortality rate. However, there has been a decline in the mortality rate for these 20 years, reaching 18.2% in the latest data.

According to 2008 statistics, omphalocele was associated with the highest mortality, showing a mortality rate of 23.6%, followed by diaphragmatic hernia (18.2%), and gastrointestinal perforation (16.9%). When the relation between the mortality rate and weight at birth is analyzed, it is apparent that the mortality rates vary around levels of less than 10% in mature newborns, whereas the corresponding rates in very low-birth-weight or extremely low-birth-weight newborns remain high, at 14% and 21%. In particular, the mortality rates from the top three diseases are very high in low-birth-weight newborns. In these newborns, particular attention has recently been paid to necrotic enterocolitis, localized small bowel perforation, and meconium-related ileus peculiar to low-birth-weight newborns. The involvement of SIRS (systemic inflammatory response syndrome) has been attracting attention as a possible cause of these conditions. It is highly important for professionals of perinatal medicine, neonatal medicine, and pediatric surgery (neonatal surgery) to cooperate and provide team care to deal with the presumably increasing clinical conditions peculiar to low-birth-weight newborns.

### Project of the Japan Society of Perinatal and Neonatal Medicine

Finally, we would like to introduce our project that was started in July 2007 for promoting the technique of neonatal cardiopulmonary resuscitation (NCPR). Even with advanced medical practice today, about 1% of newborns require resuscitation. This project was begun based on the view that all healthcare professionals who deal with childbirth delivery should master the proper resuscitation technique. Trainees who took the Society-accredited training sessions exceeded 20,000 individuals over the past 3 years, and 1,200 NCPR instructors have so far been produced. We intend to continue this project to achieve the goal that at least one staff member who is able to perform initial resuscitation of newborns participate in every case of childbirth delivery.

### Future Perspective

This Society has been reluctant to take part in political activities that are aimed at inducing financial profit for Society members. In the

meantime, the shortage of obstetricians and neonatal physicians is the underlying cause of the potential collapse of perinatal care, a topic that is currently receiving a high level of media coverage. Under these circumstances, our Society recognizes that aggressive policy proposals will be necessary based on the analysis of our present status. As a result, several important issues were formed into draft proposals, and after deliberation in the Central Social Insurance Medical

Council, they were used for the latest revision of medical service fees and the Ministry of Health, Labour and Welfare Grant Programs in fiscal 2010. We are obliged to make efforts to realize early fulfillment of other remaining issues. In particular, presenting specific proposals for promoting the support system for female physicians is essential for improvement of perinatal and neonatal medical practice.