


Current Status of the Obstetric Compensation System for Cases of Cerebral Palsy at a General Hospital in Tochigi, Japan

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Abstract

Objective. The Japan Obstetric Compensation System for Cerebral Palsy (JOCSC) was launched in January 2009 as the first nationwide no-fault compensation system. The aim of the study was to clarify the present status of functioning of the JOCSC in pediatric and obstetric departments at a general hospital. **Method.** Children eligible for compensation are as follows: (1) Gestational week at 32 weeks or later and birth weight of 1400 g or more, or 28 weeks or later with apparent asphyxia at birth. (2) Severe cerebral palsy related to hypoxia at delivery, not caused by congenital reasons or factors during the neonatal period. **Results.** Applications for the JOCSC were submitted for 11 cases (5 cases born at our hospital and 6 cases born at other childbirth facilities). Eight cases (4 cases born at our hospital and 4 cases born at other childbirth facilities) were authorized for the JOCSC. Remaining 3 cases were judged as not being eligible because of 2 cases with congenital reasons for the condition and 1 case with the judgement as mild cerebral palsy. **Conclusion.** Ten years have elapsed since the establishment of the JOCSC. Improved awareness of the medical staff and caregivers of children with cerebral palsy about the JOCSC should be promoted.

Keywords

cerebral palsy, general hospital, no-fault compensation, obstetric compensation system, perinatal medicine

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Introduction

Cerebral palsy is one of the most common cause of childhood physical disability, and is caused by a non-progressive cerebral lesion that could develop anytime between conception to within 4 weeks after birth. Risk factors include preterm birth, twin pregnancy, certain infections during pregnancy, difficult delivery, etc. Often, cerebral palsy is associated with neonatal hypoxia and acidemia during labor, as a result of placental and umbilical cord abnormalities. A systematic review and meta-analysis conducted by Oskoui et al¹ reported a pooled overall prevalence of cerebral palsy of 2.11 per 1000 live births. Touyama et al² reported that the overall prevalence of cerebral palsy in children born between 1988 and 2007 in Okinawa, Japan was 1.88 per 1000

live births, which was similar to the prevalence rates reported from other countries.

In medical accidents related to childbirth, judgment of malpractice is often difficult. In Japan, obstetrics and gynecology departments, among various clinical departments, often face medical lawsuits, and according to a few reports, the number of medical lawsuits per 1000 medical doctors was the highest in the departments of obstetrics and gynecology.^{3,4} This is one of the reasons

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for the continuing fall in the number of obstetricians in our country. Therefore, nationwide security of the perinatal medical system is required.⁴

Under these circumstances, the Japan Obstetric Compensation System for Cerebral Palsy (JOCSC) was established in January 2009, as the first nationwide no-fault compensation system.³⁻⁶ No-fault compensation system in medicine was precedingly introduced in New Zealand, Norway, and Sweden et al, so the JOCSC referred to the system of these countries when it was established.^{7,8} In our country, this system is managed by the Japan Council for Quality Health Care (JQ), which has major functions, including compensation for the economic burden faced by children with cerebral palsy and their families, analysis of the causes, and prevention of recurrence of similar cases.^{4,9} Pediatricians as well as obstetricians manage the JOCSC at general hospitals, since they are involved in the resuscitation of neonates with neonatal asphyxia, and in the diagnosis and treatment of infants with cerebral palsy.

Study Significances

In the field of perinatal medicine in our country, mainly university hospitals and children's hospitals are designated as general perinatal medical centers. On the other hand, general hospitals with pediatric and obstetric departments are assigned important roles as regional perinatal medical centers. However, the status of the JOCSC at general hospitals remains unclear until date. The aim of this study was to clarify the present status of functioning of the JOCSC in general hospitals with pediatric and obstetric departments.

Method

Study Design

We retrospectively collected the data of the patients in the pediatric and obstetric departments of the Japanese Red Cross Ashikaga Hospital, a general hospital located in Tochigi prefecture 70 km north of Tokyo, the capital city of Japan. The hospital has 24 clinical departments, including departments of pediatrics, obstetrics and gynecology, and 540 hospital beds, and the number of childbirths was 550 per year, on average, in the last 10 years. The patients with severe cerebral palsy associated with neonatal hypoxia during labor were able to apply for the obstetric compensation system. The obstetricians of our hospital participated in the childbirth born at our hospital. The pediatricians of our hospital participated in the resuscitation of neonates with asphyxia born at our hospital. Furthermore,

they were engaged in the diagnosis and medical care of infants with cerebral palsy born at our hospital and born at other childbirth facilities as well.

Participants and Eligibility

The participants of the study were children born after January 2009 when the JOCSC was established. Children born at our hospital and children born at other childbirth facilities, transferred or referred to our hospital were included. Children eligible for the JOCSC were defined as follows.⁴

1. Gestational week at 33 weeks or later and birth weight of 2000 g or more, or 28 weeks or later with apparent asphyxia at birth for children born between January 1, 2009 and December 31, 2014.
2. Gestational week at 32 weeks or later and birth weight of 1400 g or more, or 28 weeks or later with apparent asphyxia at birth for children born after January 1, 2015.
3. Severe cerebral palsy related to hypoxia at delivery, not caused by congenital reasons or factors during the neonatal period.
4. Disability nearly equivalent to first or second degree in physical disability certificate. Applications for compensation were accepted from the child's first birthday until fifth birthday.

The childbirth facility participated in this system, so that insurance premiums for compensation were paid by the childbirth facility. When a patient was approved as a recipient of compensation by the operating organization, JQ, the JQ applied to the insurance company for compensation payment as a deputy of the affiliated childbirth facility. Then, the insurance company provided the compensation. When certified for compensation, a total of 30 million yen (approx. US \$280 000) were paid for each recipient of compensation.^{3,4}

In addition, after authorization of a recipient as being eligible for compensation, the causes of the cerebral palsy were analyzed from a clinical viewpoint. The analyses reports were provided to both the caregiver of the child and the childbirth facility. Preventive measures were proposed through analysis of the accumulated reports for the improvement of obstetric care.^{3,4}

Ethical Approval and Informed Consent

This study was approved by the Research Ethics Committee (REC) of Japanese Red Cross Ashikaga

Hospital (Approval #2019-41). According to the retrospective nature of the study, the REC waived the requirement for informed consent.

Results

After the JOCS was established in January 2009, applications for the JOCS were submitted for 11 cases from the pediatric and obstetric departments of our hospital. The profiles of the 11 cases were shown in Table 1. Case 1 to 5 were the patients who were born at our obstetric ward of our hospital. In case 1, a female infant, although no asphyxia was apparent at birth, oxygen supplementation was needed for 3 days after birth due to transient tachypnea of the newborn. At 8 months old, the infant developed right-sided hemiparesis and at 11 months old, brain magnetic resonance imaging (MRI) demonstrated obsolete ischemic lesions accompanied by atrophic changes from the left basal ganglia to the left corona radiata. At 4 years 4 months old, she was certified as being eligible for compensation. Case 2 also had no apparent asphyxia at birth, but motor retardation was noted and she could not walk without support at 3 years old. Thereafter, application for the JOCS was submitted, which, however, failed to be approved, because congenital factor (cerebellar atrophy) was involved. Both cases 3 and 4 had severe asphyxia at birth. Subacute-phase brain MRI showed hypoxic ischemic encephalopathy in case 3 and periventricular leukomalacia in case 4. In both cases, psychomotor retardation became manifest and they were diagnosed as having severe cerebral palsy at other hospitals and subsequently certified as being eligible for the JOCS (at 2 years 8 months old in case 3 and at 1 year 9 months old in case 4). Case 5 showed mild asphyxia at birth and received treatment with nasal-directional positive pressure ventilation for 4 days after birth. At 10 months old, equinus of the foot was noted and physical rehabilitation was started. She was diagnosed as having cerebral palsy at our hospital and certified as being eligible for the JOCS at 4 years 10 months old.

Case 6 to 11 were the patients who were born at other childbirth facilities. In case 6, the infant was brought by emergency transfer from a nearby childbirth facility due to asphyxia at birth and meconium aspiration syndrome. He developed hypoxic ischemic encephalopathy, was diagnosed as having severe cerebral palsy, and was certified as being eligible for the JOCS at 3 years old. Case 7 was born with asphyxia at birth and was referred to our hospital at 3 months old for developmental follow-up. He was on physical rehabilitation for spastic tetraplegia and was certified as being eligible for the JOCS at 4 years old. Case 8 was born with asphyxia at birth as the second child of triplets.

Tracheotomy was performed due to persistent respiratory distress at 6 months old and she was transferred to our hospital at 9 months old. She had global retardation and was diagnosed as having severe cerebral palsy. At 1 year old, an application was submitted for the JOCS, but it was not approved because of the involvement of congenital factor (upper respiratory lesion). Case 9 was transferred on the day of birth from a nearby childbirth facility due to mild asphyxia and meconium aspiration syndrome. The infant received oxygen supplementation for 5 days, which was followed by recovery of his respiratory symptoms. However, the infant developed psychomotor retardation and physical rehabilitation was started at 1 year 10 months old. His case was certified as being eligible for the JOCS at 5 years old. Case 10, as with case 7, was born with asphyxia at birth and was referred to our hospital at 5 months old for developmental follow-up. Acute-phase brain MRI revealed evidence of hypoxic ischemic encephalopathy. He developed motor retardation, and an application for the JOCS was submitted at 3 years 4 months old. However, he was not found to be eligible for the compensation, because he had only mild cerebral palsy. Case 11 was transferred on the day of birth from a nearby childbirth facility due to severe asphyxia. Artificial respiration was immediately started and hypothermia therapy was undertaken. He developed severe cerebral palsy due to hypoxic ischemic encephalopathy, and was certified as being eligible to receive the JOCS at 1 year 2 months old. He died of respiratory failure due to refractory pneumonia at 1 year 8 months old.

The Figure 1 showed the results of judgment of the JQ for the JOCS since 2009 in our country.¹⁰ Between January 2009 and October 2019, the JOCS was applied for in 3859 cases and 2890 were certified as being eligible to receive the compensation, accounting for approximately 75% of all the applied cases. Of these, children born between January 2009 and December 2013 reached their fifth birthday by the end of 2018 and the results of the judgment had already been confirmed. The number of certifications was the highest in 2009, gradually decreasing thereafter.

Discussion

In the pediatric and obstetric departments of a general hospital like ours, there are numerous opportunities to apply for the JOCS. Both the obstetric department, which serves as a childbirth facility, and pediatric department, where newborns with asphyxia are resuscitated, are engaged in the diagnosis and medical care of infants with cerebral palsy who may be entitled for the JOCS. When parents of children with cerebral palsy

Table 1. The Profiles of 11 Cases Managed at Our Hospital (Case 1-5 Born at Our Hospital, Case 6-11 Born at Other Childbirth Facilities).

Case	Gender/Birth date	Gestational week/ Birth weight (g)	Asphyxia	Diagnosis/(Physical disability certificate)	Date of application/Date of notification	Result of judgment	Reason for no eligibility
1	F Nov/30/2009	38/2280	(-)	Right-sided hemiparesis	Nov/15/2013 Apr/4/2014	Eligible	
2	F Nov/27/2011	38/2774	(-)	Motor retardation (Class 2)	Apr/17/2015 Sept/10/2015	Not eligible	Congenital factor
3	M Aug/11/2012	40/3116	(+)	Hypoxic ischemic encephalopathy (Class 1)	Jan/28/2015 May/7/2015	Eligible	
4	M May/23/2014	33/1298	(+)	Periventricular leukomalacia (Class 1)	Oct/28/2015 Mar/7/2016	Eligible	
5	F June/27/2014	33/2140	(+)	Periventricular leukomalacia (Class 2)	Jan/7/2019 May/10/2019	Eligible	
Case	Gender/Birth date	Gestational week/ Birth weight (g)	Asphyxia	Diagnosis/(Physical disability certificate)	Reason for referral to our hospital (age)	Result of judgment (age)	Reason for no eligibility
6	M Nov/27/2011	38/2118	(+)	Hypoxic ischemic encephalopathy (Class 1)	Neonate transfer (0d)	Eligible (3y)	
7	M May/29/2012	33/1621	(+)	Spastic tetraplegia (Class 2)	Follow-up of development (3 mo)	Eligible (4y)	
8	F July/8/2012	32/1093	(+)	Global retardation (Class 1)	Infant transfer (9 mo)	Not eligible (1y)	Congenital factor
9	M Dec/15/2013	40/3075	(+)	Global retardation (Class 1)	Neonate transfer (0d)	Eligible (5y)	
10	M Aug/14/2015	37/3250	(+)	Hypoxic ischemic encephalopathy (Class 2)	Follow-up of development (5 mo)	Not eligible (3y)	Mild cerebral palsy
11	M Mar/28/2017	39/2598	(+)	Hypoxic ischemic encephalopathy (Class 1)	Neonate transfer (0d)	Eligible (1y)	

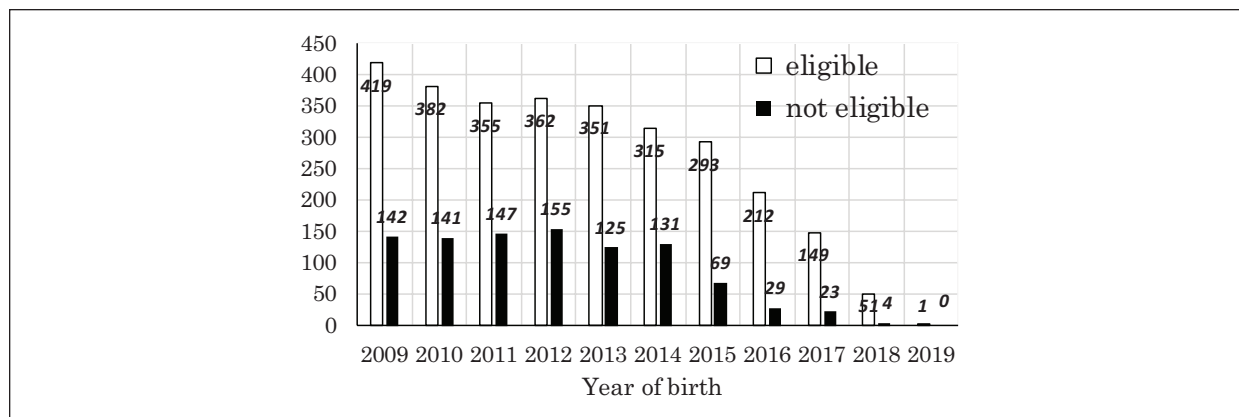


Figure 1. Results of Judgment of the JOCS by Year of Birth.

wish to apply for the JOCS, diagnosis by a registered physician (pediatric neurologist or certified physician for physical disability) is necessary.⁴ Although 500 physicians are registered at present in Japan, an increase in the number of registered physicians may be preferable to expand the scope of the JOCS.

At our hospital, applications for the JOCS were submitted for 11 cases (5 cases born at our hospital and 6 cases born at other childbirth facilities). Of these, 8 cases (73%) were certified as being eligible, consistent with the national average certification rate. On the other hand, the remaining 3 cases (1 case born at our hospital and 2 cases born at other childbirth facilities) were not certified as being eligible for the JOCS. The reasons were involvement of congenital factors in 2 cases and mild cerebral palsy in 1 case. For the JOCS to be authorized, the cerebral palsy should be related to hypoxia at delivery.⁴ Consequently, both blood gas data at birth and imaging diagnosis of the central nervous system in the acute phase should be taken into consideration at the time of application for the JOCS.

The prevalence of cerebral palsy is reported to be approximately 2 per 1000 live births.^{1,2,11,12} Since about 1 million babies were born annually until 2015, the number of children with cerebral palsy was estimated to be approximately 2000 in this country. However, the average number of children certified as being eligible for the JOCS was 374 between 2009 and 2013, being much lower as compared to the estimated number of children with cerebral palsy. Thus, it is considered that analysis of the cases certified as being eligible for the JOCS is insufficient to grasp the real state of cerebral palsy in our country. This also means that there are a number of children who should ideally have been certified as being eligible for the JOCS. Ten years have elapsed since the establishment of the JOCS, and improved awareness of the medical staff and caregivers

of children with cerebral palsy about the JOCS should be promoted.^{13,14}

Study Limitations and Future Directions

While the current study revealed the current status of the JOCS at a general hospital with pediatric and obstetric departments, the number of patients included in this analysis was limited, because the data were collected from a single general hospital. Therefore, further study, including collection and analysis of data concerning the JOCS, should include cases from nearby hospitals in this region. The pediatric and obstetric departments of a general hospital should make efforts to make the public well aware of the JOCS, since improvement of maternal and child healthcare in our country is expected in large measure by the development of the JOCS.

Conclusion

Until date, little is known about the obstetric compensation system at general hospitals in our country. Our study revealed the current status of the JOCS at a general hospital with pediatric and obstetric departments. Ten years have elapsed since the JOCS was first established, and improved awareness of the medical staff and caregivers of children with cerebral palsy about the JOCS should be promoted.

Author Contributions

KY: contributed to conception and design; drafted manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.

TM: contributed to acquisition; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.

SA: contributed to acquisition; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.

SY: contributed to acquisition; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.

Declaration of Conflicting Interests

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