

소아재활

발표일시 및 장소 : 10 월 27 일(토) 10:20-10:30 Room E(5F)

OP4-1-3

Growth Parameters as Mortality Risk Factors in Cerebral Palsy

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OBJECTIVE

Subjects with birth weight <1000 g have the highest risk of failure to thrive (FTT), and mortality in general population (GP) and cerebral palsy (CP). However, for children with birth weight <1000 g, a higher percentage of those children will inevitably have FTT, as their birth weight is at such a low point. Birth weight and FTT are not truly independent variables based on the current definition of failure to thrive. A more accurate approach would be to determine criteria based on the rate of weight gain over time. The objective of this study was to analyze growth parameters as mortality risk factors in CP.

METHODS

This was a birth cohort study based on the National Health Screening Program for Infants and Children database, which screens growth and development of children. The birth cohort consisted of 2 191 956 subjects, representing 93.5% of live births from 2007–2011, with a 10-year follow-up. CP subjects were identified and growth parameters in terms of birth weight, FTT, the rate of weight gain, and death were collected. We analyzed the mortality rate for subjects who were alive one year after birth.

RESULTS

Prevalence of CP was 2.0 per 1000 live births. All-cause mortality rate for subjects who were alive one year after birth was 0.6 deaths per 1000 live births in GP and 20.8 deaths per 1000 live births in CP during the 10-year follow-up period, indicating that the mortality rate was 35 times higher after the age of 1 year in CP subjects. When compared to GP, CP subjects had 10 times more subjects with birth weight \leq 2500 g, 8.98 times more FTT, significantly lower follow-up body weight and rate of body weight gain. Among three growth parameters, FTT was the only parameter showing significantly higher mortality rate ($P < .001$).

CONCLUSIONS

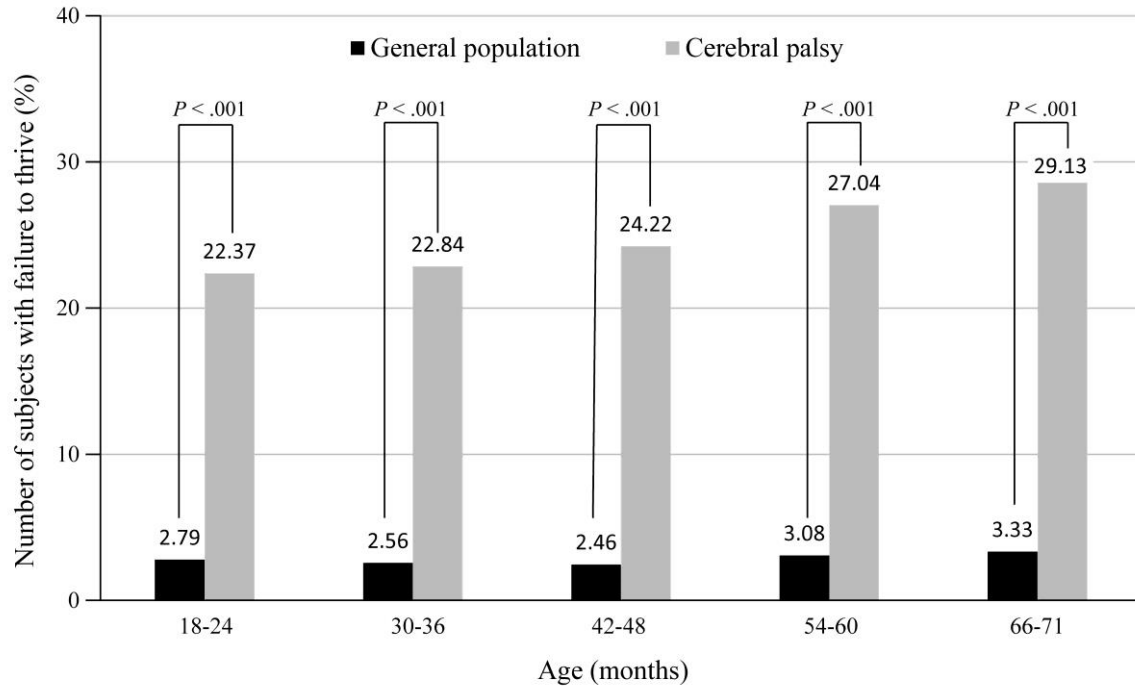
In a nationwide birth cohort, we found a CP prevalence rate of 2.0 per 1000 live births. CP subjects had 35 times more deaths after the age of 1 year compared to the GP. FTT was the strongest mortality risk factor in subjects with CP. This is the first study on growth and mortality rate which simultaneously followed up both the GP and CP subjects.

Comparison of All-Cause Mortality^a After the Age of 1 Year for 10 Years of Follow-Up Period

Gender	Subjects in General Population			Subjects With Cerebral Palsy		
	Number of Live Births	Number of Deaths	All-Cause Mortality	Number of Live Births	Number of Deaths	All-Cause Mortality
Boys	1 125 964	826	0.73	2540	40	15.75
Girls	1 060 481	588	0.55	1836	51	27.78
Total	2 186 445	1414	0.65	4376	91	20.80

^aAll-cause Mortality = number of deaths/number of live births X 10³.

Comparison of All-Cause Mortality After the Age of 1 Year for 10 Years of Follow-Up Period.



Comparison of failure to thrive.

Adjusted Hazard Ratio of Death After the Age of 1 Year by the Age of the Subjects at the Time of NHSCI Screening

Age at the NHSC Program (months)	18-24		30-36		42-48		54-60		66-71	
Number of Subjects	1 373 845		1 449 871		1 395 656		1 039 985		701 520	
Variables	Hazard Ratio (95% CI)	P	Hazard Ratio (95% CI)	P	Hazard Ratio (95% CI)	P	Hazard Ratio (95% CI)	P	Hazard Ratio (95% CI)	P
Presence of cerebral palsy										
No	1.00		1.00		1.00		1.00		1.00	
Yes	11.74 (6.62-20.82)	<.001	11.30 (5.93-21.53)	<.001	15.38 (8.44-28.04)	<.001	17.96 (9.10-35.47)	<.001	24.52 (9.85-61.05)	<.001
Gender										
Boy	1.00		1.00		1.00		1.00		1.00	
Girl	0.71 (0.60-0.83)	<.001	0.71 (0.59-0.86)	<.001	0.60 (0.48-0.76)	<.001	0.59 (0.44-0.80)	<.001	0.55 (0.37-0.84)	.01
Birth weight (g)										
≥2500	1.00		1.00		1.00		1.00		1.00	
<1000	2.55 (0.96-6.74)	.06	2.25 (0.76-6.66)	.15	0.90 (0.21-3.92)	.89	0.52 (0.07-3.99)	.53	NA	NA
1001-2499	1.18 (0.96-6.74)	.33	1.38 (0.97-1.97)	.08	1.22 (0.79-1.86)	.37	0.99 (0.56-1.73)	.96	0.75 (0.31-1.81)	.52
Presence of failure to thrive										
No	1.00		1.00		1.00		1.00		1.00	
Yes	2.79 (2.06-3.79)	<.001	3.41 (2.33-4.98)	<.001	4.58 (3.00-7.00)	<.001	4.82 (2.96-7.83)	.00	3.33 (1.67-6.62)	<.001
Rate of body weight gain (percentile)										
>75 th	1.00		1.00		1.00		1.00		1.00	
≤25 th	1.08 (0.86-1.36)	.49	0.92 (0.69-1.22)	.55	0.94 (0.67-1.33)	.73	0.81 (0.54-1.22)	.31	1.24 (0.69-2.23)	.48
26-50 th	0.92 (0.73-1.15)	.46	1.07 (0.82-1.39)	.61	1.05 (0.76-1.45)	.76	0.73 (0.49-1.08)	.12	0.91 (0.50-1.66)	.76
51-75 th	1.02 (0.82-1.27)	.86	0.99 (0.76-1.29)	.93	0.94 (0.68-1.31)	.73	0.51 (0.33-0.79)	.00	0.85 (0.46-1.55)	.59

CI, confidence interval; NA, not applicable; NHSC, National Health Screening Program for Infants and Children.

Adjusted Hazard Ratio of Death After the Age of 1 Year by the Age of the Subjects at the Time of NHSCI Screening.