

Prospective study of the outcome after close intra- and postpartal monitoring of premature infants

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A prospective study including 39 preterm (< 37 weeks of gestation) and 10 term control infants was carried out to show whether 34 gestational weeks is a more adequate limit for prematurity. High risk pregnancies were excluded and only vaginal born infants were included (1). A neurodevelopmental follow-up until 3 years of age was done separately by a psychologist and a neonatologist. The material was divided according to gestational age and fetal acidosis. Group I with 13 of 15 surviving infants born after 29-33 weeks of gestation and a mean birthweight of 1595 g. Group II comprises 23 of 24 surviving infants born after 34-36 weeks of gestation with a mean birthweight of 2367 g. In this group 4 infants were small-for-gestational age (SGA). In Group I 7 of 13 infants had fetal acidosis (pH < 7.20) in comparison to only 3 of 23 Group II infants. Within the first hour post partum the acid-base balance had normalized in both acidotic and non-acidotic infants. The Apgar score at 5 minutes was above 7 for all infants. On an intellectual performing test (2) there were no group differences when corrected for gestation. On language performance at 26 months of age the preterm infants were significantly delayed compared to control term infants. Neonatal treatment, parent-infant separation, maternal education and age had no implications on the results. On psychological assessment 3 of the 5 low performing infants also had persistent neurodevelopmental delay and fetal acidosis at birth. Four of 5 had a late language development. All 5 started to walk after 16 months of age as compared to the high performing group.

Table 1. Extreme infants on psychological assessment at 9 months of age

Performance	Group	G.A. (w)	Fetal pH	Sex	B.W. (g)	Walking age	Late speech
Low	I	29	7.16	♀	1140	23	yes
	I	29	7.17	♀	1400	18	-
	I	30	7.15	♀	1220	16	yes
	I	33	7.26	♀	1635	18	yes
	II	36	7.37	♂	2490	17	yes
High	I	33	7.16	♀	1780	12	-
	II	34	7.21	♀	2550	9	-
	II	35	7.27	♂	2670	12	yes
	II	35	7.34	♀	2120	13	yes
	II	36	7.39	♀	2750	13	-

On neurodevelopmental assessment 1 Group I and 2 Group II infants showed permanent handicaps at 3 years of age. Transient deviating behavior was noted more often in Group I infants observed throughout the study period.

Table 2. Neurodevelopmental observations

Group I n = 13		Age (months)					
		0	3	7	12	24	36
	PMD	6	6	3	5	7	-
	PMR	-	-	1	2	1	1
	NH	-	-	-	-	-	-
Group II n = 23		Age (months)					
		0	3	7	12	24	36
	PMD	8	2	6	5	4	-
	PMR	-	-	-	1	1	1
	NH	-	-	-	1	1	1

PMD = Psychomotor deviation

PMR = Psychomotor retardation

NH = Neurological handicap

Our findings suggest that preterm delivery after 33 completed gestational weeks implies a low risk of neurodevelopmental handicaps. Therefore 33 completed weeks seems to be a more appropriate limit for prematurity than the conventional 37-38 conceptional weeks.

Literature

1. Westgren M, Holmqvist P, Svenningsen NW, Ingemarsson I (1982). Intrapartum fetal monitoring in preterm deliveries: Prospective study. *Am J Obstet Gynecol* 60: 99-106.
2. Catell P (1960). *The measurements of intelligence of infants and young children*. New York: The Psychological Corporation.