

DOES NEONATAL THERAPEUTIC HYPOTHERMIA TREATMENT ALTER THE MORTALITY OUTCOMES FOR TERM INFANTS BORN WITH NO HEART BEAT

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BACKGROUND

There is a paucity of data on the outcome of normally formed term infants who are born with no heart rate. Most of the studies on an infant's absent heart beat at birth and subsequent outcome are based on case series published before the advent of Therapeutic Hypothermia (TH). There is uncertainty whether TH alters the prognosis for this cohort of severely compromised infants.

AIMS

Determine the mortality rates of term infants born with no heart beat in the era of TH.
Investigate whether TH alters the likelihood of survival of term infants born with no heart beat.

METHODS

Data was analysed from the Neonatal Therapeutic Hypothermia in Ireland Annual Reports (2016-2019), published by the National Clinical Programme for Paediatrics and Neonatology and the National Perinatal Epidemiology Centre. All the data was collected and verified by J Mc who visited all 19 maternity hospitals. In the study period there were 281 cases of neonatal encephalopathy (NE) among 246,483 births. NE rate 1.1 per 1000 births. Of the 281 NE cases there were 52 (18.5%) infants born with no heart beat at birth. All the infants received intensive neonatal resuscitation at birth and were subsequently commenced on TH.

RESULTS

52 (18.5%) of the infants with NE who were administered TH were born with an undetectable heart rate.

Overall, a zero heart rate at birth has a mortality rate of 38.5%.

This mortality rate increases with time interval spent in asystole.

Infants who established a heart beat in the 0-5 minute time interval had mortality rate of 14.8%.

Infants who established a heart beat in the 5-10 minute time interval had a mortality rate of 41.7%.

Infants who established a heart beat after 10 minutes had a mortality rate of 90.9%.

RESULTS

Infants Born with no Heart Beat: The Relationship between the Duration of Asystole and the Subsequent Mortality Rate.

Time Interval when a heart beat was detected	No. (%) of infants	Mortality: No. of infants (%)
0-5 min	27 (51.9%)	4 (14.8%)
5-10 min	12 (23.1%)	5 (41.7%)
> 10 min	11 (21.2%)	10 (90.9%)
Not recorded at 20 min	2 (3.8%)	-

CONCLUSION

The mortality rate of infants born with no heart beat rises in relation to the period of time spent in asystole. When the period of asystole extends beyond 10 minutes, the mortality is 90.9%. These findings indicate that this latter group continue to have a very poor outcome. Based on our data, therapeutic hypothermia has not altered the survival rate of infants born with no heart beat. This is in keeping with the existing literature that TH works best with moderate encephalopathy cases.

The strength of this study is that it is a complete national data set for a geographically defined population. It is representative of what is happening in clinical practice. It provides guidance about the prognosis for extremely compromised term infants born with no heart beat at birth.



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