

PERINATAL MORTALITY NECROPSY FINDINGS, 1957-1966

H. M. SULTANA

B.Sc., M.D., D.M.R.T.

F. CALLEJA

M.D., B.Sc., F.C.PATH.

*Department of Pathology,
Royal University of Malta*

This analysis is an attempt to classify perinatal deaths according to the internationally accepted criteria established by Butler and Bonham (1963). It is hoped that it will serve as a base line for further studies.

All the postmortem reports on perinatal deaths carried out at St. Luke's Hospital during the ten year period 1957 to 1966 were reviewed and the primary necropsy finding in each case was established. The primary necropsy finding was considered to be the morbid anatomical lesion that was the least compatible with continued separate existence. The histological material that was available was also examined before a definite conclusion was reached.

As is the practice in Great Britain and America, the term, Perinatal Death, is here used to include stillbirths and death within the first seven days of life. This is to differentiate it from the term "neonatal

death" (which includes all infants who die within the first four weeks of life). Infants born after twenty-eight weeks' gestation with no sign of life after separation from the mother are considered to be stillbirths.

Classification: The number of peripostmortem examinations carried out during this ten year period was 243. Table I shows the distribution of primary necropsy findings both for stillbirths and for early neonates (first week deaths excluding stillbirths).

The terms used in this classification are mostly self-explanatory. Thus, for example, "antepartum death" (no major lesion) implies a *macerated* stillbirth with no macroscopic or microscopic abnormality.. "Intrapartum anoxia" refers to *fresh* stillbirths or neonates with no major lesion to account for death except signs of intrapartum asphyxia, such as, petechial haemorrhages and congestion of organs, with or without meconium aspiration.

TABLE I

PRIMARY NECROPSY FINDINGS	ST. LUKE'S HOSPITAL SERIES				BUTLER & BONHAM	
	Stillbirths	Early Neonatal Deaths	Perinatal Deaths		Perinatal Deaths	
Congenital Malformation	0	28	37	15.2%	88	16.6%
Isoimmunisation	0	4	4	1.7%	24	4.5%
Antepartum death.						
No major lesion	1	0	1	0.4%	64	12.1%
Antepartum Anoxia	17	0	17	7.0%	56	10.0%
Intrapartum Anoxia	24	58	82	33.7%	120	22.7%
Intrapartum Anoxia and Cerebral Birth Trauma	7	19	26	10.7%	42	8.0%
Cerebral Birth Trauma	4	19	23	9.5%	13	2.5%
Pulmonary Infection	0	22	22	9.1%	27	5.1%
Hyaline Membrane	0	2	2	0.8%	33	6.2%
Massive Pulmonary Haemorrhage	0	2	2	0.8%	13	2.5%
Intraventricular Haemorrhage	1	8	9	3.7%	14	2.6%
Extrapulmonary Infection	0	2	2	0.8%	0	0%
Intrapartum Death.						
No major lesion	0	0	0	0%	9	1.7%
Neonatal Death.						
Histology not available	0	8	8	3.3%	3	0.6%
Miscellaneous	2	4	6	2.5%	5	0.5%
Neonatal Death.						
No pathological findings	0	2	2	0.8%	18	3.4%
Total	65	178	243	100.0%	529	100.0%

In many instances, besides clear evidence of anoxia, there is also some subdural haemorrhage associated with laceration of the falx or tentorium. In these cases it is difficult to decide whether death was due to birth trauma or to anoxia; for this reason such cases are classified under the heading of "Intrapartum anoxia with cerebral birth trauma". The term "Miscellaneous" covers pathological rarities which cannot be included in any of the other categories; examples are Meconium peritonitis, Foetal exsanguination and Adrenal haemorrhage.

Congenital abnormalities: These accounted for 15.2% of all deaths. This figure does not include minor malformations such as a cleft palate or an extra digit. Only abnormalities which appeared to be incompatible with life were included in this category. Even anomalies such as a small septal defect were not considered to be the primary necropsy finding in the presence of a more serious pathological

lesion such as an intraventricular haemorrhage.

TABLE II

System	Single System Involved	Multiple Systems Involved	Total: Each System
Cardiovascular	10	6	16
Alimentary	7	4	11
Urinogenital	6	4	10
Skeletal	1	5	6
Central Nervous	2	3	5
Other	1	1	2

Table II shows the types of malformations which were encountered. In 27 infants there were malformations limited to a single system whereas in 10 infants the malformations involved multiple systems. Congenital malformations were commonest in the Cardiovascular System (16), the Alimentary system (11) and the Urinogenital system (10).

Twelve of the sixteen Cardiovascular malformations presented as single lesions.

These included five Ventricular septal defects, four Atrial septal defects, one Coarctation of the Aorta and one Truncus communis. The other four Cardiovascular malformations presented multiple heart lesions.

Out of ten urinogenital malformations, six showed renal agenesis and two of these were associated with anomalies of the genital organs; there were three cases of Polycystic kidneys and one case of bilateral hydronephrosis.

Among the eleven gastro-intestinal malformations, there were five diaphragmatic hernias, two oesophageal atresias and one rectal stenosis with agenesis of the gall bladder and bile ducts.

Total perinatal deaths in Maltese Islands: in order to ascertain what proportion of perinatal deaths are being subjected to a postmortem examination, we obtained the figures for total stillbirth and perinatal deaths which occurred in Malta during the period 1957 to 1966.

TABLE III

Year	Total Perinatal Deaths	Necropsies Performed	
		No.	%
1957	349	18	5.1
1958	350	20	5.7
1959	344	17	4.9
1960	334	11	3.3
1961	290	14	4.8
1962	316	39	12.3
1963	282	36	12.4
1964	242	18	7.4
1965	201	25	12.4
1966	171	45	26.3
Total	2879	243	8.4

Table III shows that our material only represents 8.4% of all perinatal deaths. It is, however, encouraging to note that in the more recent years there appears to be a trend for the mortality rate to decrease and the number of necropsies to increase so that the percentage of post-mortem examinations being carried out is definitely increasing.

Discussion

Comparison of our necropsy findings

with those of Butler and Bonham show considerable variations. Although, in both series, the commonest cause, of death is Intrapartum anoxia, with Congenital malformations as the second commonest cause, the percentages in many of the categories differ quite markedly. To a very large extent, this can be explained by the fact that whereas in the series of Butler and Bonham, out of a total of 529 perinatal necropsies, there were 348 stillbirths and 181 early neonates, in our own series the proportion is completely reversed. Other divergent findings such as our higher incidence of Intrapartum anoxia and Cerebral birth trauma may be explained by the assumption of the availability of more advanced antenatal and midwifery services in the United Kingdom. Baird *et al.* (1935) showed that the perinatal mortality rate in Aberdeen was reduced to half its previous level and they attributed this, in great part, to the application of the best possible maternity and labour care. The W.H.O. figures for 1962 show that Malta has the second highest perinatal mortality rate in Europe, the figure for Malta being 42.1 per 1,000 live births whereas that for the United Kingdom is 31.4 per 1,000 live births. It must also be noted that whereas, in the series of Butler and Bonham, full histological examination of the lungs was carried out in 87% of all cases, this was only performed in 21% of our own cases. It may, therefore, follow that some of the deaths which we have included in the category of Intrapartum anoxia might have shown Hyaline membrane disease had more frequent histological examination of the lungs been carried out.

Summary

The 243 perinatal postmortem examinations carried out at St. Luke's Hospital during the ten year period 1957-1966 are analysed and classified according to the International classification introduced by Butler and Bonham. Our series is compared with that of Butler and Bonham and explanations are offered for some of the divergent findings. Congenital malformations which accounted for 15.2% of all perinatal deaths, are analysed in some de-

tail. Finally, figures are given to show that in the more recent years, the number of perinatal deaths has decreased whereas the number of necropses has increased.

Acknowledgement

We wish to thank Professor G. P. Xuereb, Head of the Department of Patho-

logy, for his encouragement and helpful criticism.

References

- BUTLER, N.R. and BONHAM, D.G., Perinatal Mortality, (E. & S. Livingstone, Ltd., 1963).
BAIRD, *et al.* (1953), J. Obstet. Gynaec. Brit. Emp., 81, 473.
U.N. Demographic Year Book 1963.