PREMATURITY IN MALTA

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The infant mortality rate in Malta has shown a remarkable fall in the last decade; it has decreased progressively from a figure of 210 per 1,000 live births in 1943 to that of 64.8 per 1,000 live births in 1953. (Report on Health Conditions, 1953). Our neo-natal mortality rate, however has not shown a corresponding improvement, the ratio remaining almost static during the 1943 — 1953 period at a rate of 39 — 34 neonatal deaths per 1,000 live births. (unpublished data). By far the greater number of deaths occur in the first four weeks of life, the first 48 hours being the most critical period (Chart). Premature infants are an especially vulnerable group. The term "premature infants" is considered, by the World health Organisation, to include all live-born infants weighing up to 5.lbs. 8.ozs. (3500G) at birth. It has long been realized that prematurity plays a very important role in neo-natal deaths. According to Clifford (1953), although premature infants represent only 7% to 8% of all births in the U.S.A. they are responsible for 60% of the total neonatal mortality. Though only about 6% of all live births in the United Kingdom are premature, about half of the foetal and infant mortality is in premature infants — mainly in the 20% with a birth weight below 4.lbs. (Lancet, 1954).

For some time now I have been interested in the prophylaxis care and prognosis of prematurity in Malta, and the object of this paper is to report on the progress so far achieved. For, despite all sorts of limitations, several premature babies have now been reared and are progressing satisfactorily.

The following two cases, both hospitalised at the Blue Sisters Maternity Unit, will illustrate the difficulties inherent in this problem of prematurity.

Case. 1. J.S. Female infant, born at 6. 30 a.m. on the 31. 10. 53; birth weight 2.lbs. 10.ozs. This was the fifth pregnancy and the estimated length of gestation was 30 weeks. Delivery was a normal one following an accidental haemorrhage. The infant was markedly cyanotic at birth and the general condition was poor. An oxygen tent was improvised by removing the top and the bottom of a large cardboard carton; a clear X-ray film was fixed on the top to give a good view of the baby inside. The baby was nursed under these conditions for two weeks, after which oxygen was administered intermittently when visitors were present. Cyanosis disappeared rapidly and the baby started showing good activity in thirty six hours. Feeding was started after forty-eight hours by means of the Belcroy. Progress was good all along. The baby was vigorous, sucked and gained weight progressively well. She is now two years old and is perfectly normal both physically and mentally.

Accidental haemorrhage is one of the most unfortunate obstetrical complications which may be responsible for premature delivery. In such cases, there is more often than not, severe and prolonged cerebral anoxia of the foetus, there is an associated high foetal mortality rate due to asphyxia. In case of survival there is a risk of permanent cerebral damage.

Case. 2. G. Female was delivered by Gaesarean section on 20. 2. 55. and she only weighed 2.lbs. First pregnancy, the mother was only 18 years old and was suffering from threatening Eclampsia despite intensive care. Estimated period of gestation was 30 weeks. The

condition on delivery was very good and by this time a standard Oxygen tent was available and a proper team work spirit had been worked out in these difficult cases between Obstetrician, Anaesthetist, Paediatrician and sister-in-charge. I took charge of the baby the moment she was delivered. No resuscitation was required apart from aspirating the stomach contents and cleaning the pharynx and mouth.

Survival rate of babies under two pounds is only 5%. The inadequate vascularization of the lung is the immediate cause of death of almost all live-born infants of such a low birth weight.

In the past in Malta records have been rather scanty and sketchy, but if impressions are anything to go by, the survival of a baby under 5.lbs. was considered very good work. As one reaches a lower weight, success was rare, and under 4.lbs. very few managed to get through, and almost none under 3.lbs.

Two groups of babies were selected to give an idea of the present position as regards Prematurity:—

Group. 1. 1,000 live born babies at the Blue Sister's Hospital whcih is a private institution. This is considered to represent the better class, the private patient group, where diet and hygiene and medical attention is taken to be quite good. These cases were collected over an eight year period, 1947 to 1954 inclusive. There were in this group 44 premature babies, including 14 sets of twins and a case of triplets. *This gives a prematurity rate of 4.4%*

Group. 2. The second group was taken from St. Luke's Hospital, a Government hospital, over a period of 14 months from September, 1954, to October, 1955, inclusive. There were 910 live births among which there was 88 prematures including 16 sets of twins and a set of triplets. *The prematurity rate for this group is 9.5%* This is far above that for group. 1. and it is of interest as several workers have already found such a discrepancy. The work of Ebbs and his associates (1941), of Burke and his collaborators (1943 and 1949), of Bloch and his Co. Workers (1952), have all shown that improvement in the socio-economic state of the people — better diet particularly protein — goes with a lowering of the prematurity rate.

An analysis of the figures and results obtained at St. Luke Hospital. (Group. 2.) is very encouraging.

TABLE I

Weight Groups	No. of Cases	No. of Deaths
under 2 lbs. 3 ozs.	7	7
2 lbs. 4 ozs. — 3 lbs. 4 ozs.	10	5
3 lbs. 5 ozs. — 5 lbs. 8 ozs.	28	4
4 lbs. 9 ozs. — 5 ibs. 8 ozs.	43	3

The three cases belonging to the heavier weight group (4 lbs. 9 ozs. — 5 lbs. 8 ozs.) died 20 mins, 1 hour, and 10 hours respectively after birth. It is obvious that obstetrical complication must have been the cause of failure in these cases. As there is no properly organized Premature Unit at St. Luke's and as the Nursery Staff is far below the recommended requirements, it must be stressed that the good results are essentially due to the enthusiasm of the Sister and Nurses.

The mangament of these cases has been on very unorthodox lines. We are working under rather difficult conditions being short of space and staff. However, there is patience, enthusiasm and co-

operation from everyone concerned. Gentleness is the keynote in resuscitation and the less one does the better. The baby is loosely wrapped in a sheet and put in an oxygen tent. No abdominal binder is applied and the baby is kept naked. Oxygen is invariably administered at the start but the rule is to discontinue it at the earliest possible moment. No feeding is given for a period varying from one to three days, depending on the prematurity of the baby, the degree of oedema and the activity of the baby. Feeding is started as soon as one is satisfied that there is no oedema, and the baby becomes active and shows signs of hunger. For the first 24 hours of feeding, glucose water by a Belcroy feeder is offered. After that a half-cream sweetened dried milk is started if breast milk is not available. Tube feeding is only resorted to as a last resort. There is no strict routine of schedules as regards time and the amount, but the nurse is encouraged to study each baby individually.

It is thought that the majority of premature babies in Malta are born at home, and it is here where progress is needed most. There is no way of knowing the actual rate of prematures born at home in Malta as weighing babies is not one of the best attributes of our midwives. Further, more gentleness is required in handling the babies, and precautions against infection equally come well down in the list of good points on the part of the midwife and those around the baby at home. One must realize that there are an average of 9,000 live births in Malta and Gozo per year. Of these only a small number are born in hospital or in private institutions where better facilities are present for such an emergency.

The ideal would be of course to prevent prematurity, but this is hardly possible at the present stage of knowledge as in 60 to 70% of cases the cause is not yet known (Potte. 1954).

The approach to the problem of prematurity in Malta will have to be:—

1. *Good Ante-natal Care.* — good diet and improved care during pregnancy. "Every added week of gestation beyond the 28th week means a gain of 4 to 8 ozs. for the foetus, and every gain of 8 ozs. cuts the expected death rate in half." (Editorial J.A.M.A. Sept. 1955)

2 *Good Obstetric Care.* The obstetrician has to take cognizance of the fact that in prematurity more than in the average labour of the full-term infant all factors tend to reduce the chances of survival unless properly handled to the advantage of the foetus. According to Cross (1954) "Various studies of the influence of the mode of delivery on the mortality of the premature babies have led to the belief that rapid delivery, breech delivery and difficult extraction by forceps increase the risk of death." "It is only among the larger premature babies that a spontaneous breech delivery becomes decidedly more lethal than a spontaneous vertex delivery. Among 650 vertex deliveries and 56 breech deliveries (all single-born, legitimate, free from congenital malformation and complications of pregnancy, and alive at the onset of labour) the combined natal and neonatal mortalities were as follows:"

TABLE II

Type of Delivery	*Birth Weight*					
	Less than 4 lbs.		4 lbs. — 5½ lb.		All births to 5½ lb.	
	NO.	Mortality	**NO.**	Mortality	**NO.**	Mortality
Spontaneous vertex	***67***	31 = 46%	***583***	25 = 4 %	***650***	56 = 9%
Spontaneous breech	***19***	13 = 68%	***37***	8 = 22%	***56***	21 = 38%

The administration of blood to the mother in cases of bleeding is very important to prevent shock and anoxia of the foetus. The use of analgesics and anaesthesia in particular has a very depressing effect on the respiratory centre and breathing of the foetus. Liberal use of oxygen to the mother during labour is advocated.

3. *Correct Methods of Resuscitation.* Gentleness should be the keynote in all that concerns the premature. None of the heroic methods of resuscitation often employed — swinging by the legs and smacking the baby heartily, flexing the thorax over the thighs, energetically passing a finger up the rectum etc. — are all now strongly condemned. As it has been said more infants survive for lack of resuscitation than in spite of it. This is even more so in the premature. What the premature needs is gentle handling and cleaning away of the naso-pharynx of nucus and a liberal oxygen supply. The rest is expert nursing with strict aseptic technique and liberal use of antibiotics. Potter (1952) maintains that bacteria are generally present in the amniotic fluid within six hours of the onset of labour even though the membranes are intact.

4. *Premature Baby Unit.* A proper prermature baby unit equipped with incubators should be established with the appropriate space isolation facilities and full complement of staff both medical and nursing. It should be attached to the maternity wing and apart from the Sick Childrens Wards. It should have facilities for admission of cases born in the home. Here a decision is taken whether the baby is best nursed at home, or transfered under ideal conditions to the Premature Baby Unit. The home conditions, the size of the baby, and the intellectual level of the mother are factors to be reckoned with in arriving at a decision.

Complications of Prematurity. The premature babies born at St. Luke's have been followed up to date.

1. *Retrolental fibroplasia,* so dreaded in prematurity has not developed in any case. Nor has it ever bee nso far described in Malta. It is now almost beyond doubt that retrolental fibroplasia is due to the use of high pressure oxygen for prolonged periods. Oxygen tents have only recently been introduced in Malta, and those that are available leak so much that it is doubted if pressures above 20-30% are ever reached. Incubators are not available in Malta.

2. *Respiratory Complications.* Two cases died of Pneumonia, and one of these had an associated Meningitis. A Post-Mortem was performet in both these cases. Asphyxia accounted for deaths in all the cases in the lower age group. We have been watching very carefully for possible cases of hyaline membrancs, but as yet we have not encountered any. It must be admitted that Post-Mortems are not easy to come by in Malta. However, it can safely be said that clinically we have no reason to suspect hyaline membrane formation in any of our cases.

3. *Infections.* As has already been stated we have had two cases of Pneumonia. Skin sepsis and sticky eyes were not frequent, in fact they were suprisingly few considering the shortage of staff.

4. *Kernicterus,* not associated with haemolytic disease has not been met with so far.

5. *Scurvy or Rickets.* None of the cases have so far showed any evidence of Scurvy or Rickets. Both Vit.C. and Vit.A & D have been supplied regularly. Vit. C. 100 to 200 mgms daily and Vit.A. 200 unist and Vit.D. 1000 units daily from 14 days onwards.

6. *Anaemia of Prematurity.* Anaemia which is often associated with prematurity has not been studied very carefully, but generally impression is

that this complication is no commoner than in full-term infant. No blood transfusions were required and administration of Iron mixtures was resorted to only in a few cases

As the number under study is small and as we are still working under rather primitive conditions, this may account for the apparent lack of the usual run of complications of prematurity.

Physical progress on the whole has been good.

As regards mental development one case is a Mongol, another baby weighing 2 lbs. 13 ozs. at birth was microcephalic and has since died at the age of two months in an institution. A third case looks as if he may eventually turn out to be a Hydrocephalus. He is now 2½ months old.

Eleven of the cases listed as dying in Table 1 died in the first 24 hours of life. Aspyhyxia, associated with the lack of pulmonary ventilation, or pregnancy complications, was the cause of death. Three cases died in the second 24 hours of life, and five in the fifth to the tenth day of life — all from infection except one which was found to have a tentorial tear and an intra-cranial haemorrhage at Post Mortem.

Apart from the number of deaths mentioned above there were four further deaths: the microcephalic baby mentioned above dying at 2 months; A Caesarean Section baby weighing 4 lbs. 5 ozs. at birth dying suddenly at 5 months from Bronchiolitis. The other two cases, weighing respectively 4 lbs. and 3 lbs. 10 ozs. at birth, were taken home against advice. They were each 3 weeks and 5 weeks old at death. The rest are living and doing well.

Conclusions

Though the results at St. Luke Hospital are obviousl y rather good, yet it must be admitted that the arrangements are as yet primitive. As the bulk of premature babies are probably born in the home, the doctors and midwives should be given special training in the care of the premature baby in its own home. However, it is argued by most people with experience that definitely in the smaller premature, and to a less extent in the larger premature if the home conditions are not satisfactory hospital is the more ideal place for delivery of such cases. One should therefore encourage the transfer of such cases to hospital, if premature delivery is anticipated.

The socio-economic standards of the population will have to be taken more seriously into consideration. More antenatal clinics with consequently more advice regarding diet of the pregnant woman will have to be developed.