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Resuscitation of the New Born

by

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In my opinion, there is no doubt of both the theoretical as well as the practical importance of the subject which we are about to discuss this afternoon, viz. "Resuscitation of the New Born." I believe that the art of saving a life should be well included in the armentarium of any medical man be he one who knows something of everything or be he one who is supposed to know everything of something.

If one traces back the evolution of the modern obstetrician, one can see that compared to many years ago, when the physician accoucher as he was then called, had the sole monopoly of doing everything appertaining to the child-birth by a woman—including that of reviving a new born—one finds that today his field has become invaded by learned colleagues such as the anaesthetist and more so by the Paediatrician. As obstetricians, I think we are quite resigned to the fact that both our medical colleagues have come to stay and I think quite rightly so. I am sure we do not grudge this invasion into our domain because we know that the ultimate objective of our organised co-operation is that of Safety for both the Mother and the Child.

I shall commence to discuss this afternoon's topic by going back into some of the fundamental principles of the physiology of respiration of the new born.

1. **Aspects of Respiratory Physiology**

   I would like to recall the aspect of expansion of the lungs of the neonate. Workers have shown that when the baby is born, its breath generates a pressure of 40 cm water to help in the lung expansion but the first cry generates a pressure of 90 cm and I certainly would take a lusty cry as a comforting sign and symptom whenever a baby is delivered. The cry helps considerably in the opening up of the pulmonary vascular system and in subsequent full aeration of the lungs.

2. **Possible causes of onset of respiration**

   There are many reasons explaining the possible causes of the onset of respiration and these include:—

   1. Anoxia consequent to Placental separation.
   2. Afferent stimuli via nerve impulses from skin, bones, muscles and joints.
   3. The Carotid Sinus reflex involving both chemical and pressor receptors.
   4. The direct influence of oxygen lack and carbon dioxide excess on the brain.

I have appended for a revision benefit some aspects of the aetiologic factors of anoxia in the newborn because a proper understanding of these factors can logically guide one to a proper code of conduct during management. The first group classification relies on an anatomic distribution of aetiology listed below:—

Anatomic Aetiology

1. RESPIRATORY CENTRE DEFICIENCY

   —inducing anoxic hypoxia.

   Conditions acting in this group include immaturity, drugs, trauma to the brain and all aspects causing maternal anoxia that will ultimately reflect on the foetus.

2. PULMONARY DEFICIENCY

   —also induces anoxic hypoxia.

   The conditions causing this group of deficiency include deficient development of the pulmonary system, tracheobronchial blockade and pulmonary atelectasis and haemorrhage.

3. VASCULAR DEFICIENCY

   —induces so-called stagnant hypoxia and is caused by a "Shock syndrome" occurring

in the newborn as well as a deficient circulation.

I would like to review also in another manner the obstetric and paediatric group of causes. It can then become evident that when we strictly divide resuscitation responsibilities and phophylactic measures, one can get a guide as to whose territory the task falls into.

OBSTETRIC AETIOLOGY

The basic disturbance is that of utero-placental circulation, and practically any condition that can cause this disturbance can also cause hypoxia in the newborn. There are many conditions which can disturb placental functions and the paediatricians have started the term "placental insufficiency syndrome" here which I believe has much to do with the following obstetric conditions:—

(1) Placental infarctions—any causes.

(2) Toxaemia, hypertension, Nephritis Diabetes Mellitus and Eclampsia.

(3) Haemorrhage before labour both accidental or abruptio placentae and placenta praevia.

(4) Erythroblastotic conditions of all causes.

(5) Prolonged labour.

(6) Post-Maturity syndrome.

(7) Maternal anaemia and maternal shock syndrome

(8) Maternal anoxia related to the use of analgesia and anaesthesia.

The cord leading to the umbilicus of the foetus may suffer true knot formations. Loops of cord may be wounded over parts of the body of the foetus. Cords may be compressed and the cord may prolapse with fatal result to the foetus.

This obstetric section concerns obstetricians most and one can see that ante-natal care when co-ordinated properly can avoid much of these causes.

I encroach somewhat into the province of the paediatricians for a change and run an aspect of paediatric aetiologic factors in this problem.

PAEDIATRIC AETIOLOGY

1. **Intracranial haemorrhage**—It is quite evident that such a condition occurring is often fatal for the baby and there will be much argument about attempting desperately to keep alive such infants.

2. **Developmental anomalies — either of the brain or pulmonary tree.** No doubt the important aspect here is that of diagnosis and the decision as to whether the anomaly is accessible to surgery or more specifically whether the anomaly is compatible with life. Conditions which sometimes can be rectified by neonatal surgery include the oesophageal atresias with or without fistulous connections with the trachea. Diaphragmatic hernia similarly is also suitable for surgery in some cases.

3. **Tracheo-bronchial blockade with or without pulmonary atelectasis.** It is obvious how this can cause hypoxia and therefore it is common teaching and common routine for accouchers to include proper tracheo-bronchial toilet and clearing of the airway as part of their first rituals in the delivery of a newborn.

4. **Intra-partum pneumonia is a real entity and similarly pulmonary haemorrhage.** Whilst treatment is possible, the results are not so promising for these conditions, and probably here it is better to prevent than to cure and I am afraid most of this task lies in the province of the obstetrician.

In summing up this discourse, I would like to emphasize some important points on aspects of resuscitation—after all this is the main title of this afternoon's symposium. In the consideration of principles to follow when one is actively involved in resuscitation, it is well worth the while to remember the 3 rules of Gibberd viz:—

1. MAKE PATENT THE AIRWAY
2. ENSURE A SUITABLE ENVIRONMENT FOR THE NEWBORN.
3. ENSURE ADEQUATE RESPIRATORY MOVEMENTS.

To this I would like to add a fourth viz:— ensure an ADEQUATE CIRCULATION. The obstetrician in most difficult cases of labour and in conditions whereby babies are born anoxic, is almost always having his hands full and perhaps it is a good plea to make for our institution that the paediatricians should always be at hand when such a delivery takes place,—be it a forceps, vacuum—extraction or breech delivery. It is desirable to see a paediatrician at hand at all Caesarean Sections for I think that the resuscitation of a newborn is best a paediatrician's responsibility. It is not that I distrust an anaesthetist in this task but that I think that like us, the

anaesthetist is also having his hands full in the handling of anaesthesia to the mother.

And now let me conclude by summarising the responsibilities of the obstetrician in this matter:—

1. ADEQUATE PROPHYLACTIC MEASURES FOR CONDITIONS LIKELY TO PRODUCE OR PRODUCING ANOXIA.

The list of conditions has been listed in earlier paragraphs.

2. JUDICIOUS USE AND JUDICIOUS CHOICE OF ANALGESIC AGENTS.
3. PERFECT TECHNIQUES IN METHODS OF DELIVERY.

"Artis non force"

Art and not force is a good axiom to follow.
