PERINATAL LESSONS FROM THE PAST

Dr von Reuss on continuous positive airway pressure. in 1914

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The classic text *Diseases of the Newborn* by August Ritter von Reuss was first published in Germany in 1914, with an English translation in 1921.¹ Von Reuss, who incidentally was the first to describe galactosaemia in 1908, had been appointed director of the Department for the Newborn at the First University Women's Clinic in Vienna in 1911 and therefore also has right to the title of being the first 'neonatal paediatrician'. Interestingly, in the foreword of his book he writes: 'the newborn period . . . includes that period of time in which the vital processes are still under the influence of those violent changes involved by the abrupt transition from intra-uterine to extra-uterine life . . . We find ourselves here on the borderline between paediatricists and obstetricians . . . To the question, On whom does the care of the newborn lie? there is only one answer: On the specialist. Whether he is an obstetrician or a paediatricist is then of no consequence'.

The *Diseases of the Newborn* is amazingly complete and modern in its approach to the physiology and pathology of the newborn as the following review of the use of continuous airway pressure in resuscitation of the newborn reveals, a technique that was only rediscovered in 1971 for the treatment of respiratory distress syndrome.²

'Hoerder³ recommends a modification of the so-called "over-pressure apparatus" of Brat and Schneider. The method makes it possible with the right pressure to keep the lung expanded during the phase of expiration, without obstructing the retraction required for ventilation of the lung. The over-pressure is produced by impeding the breathing by the application of an expiration valve. This method is carried out by a tracheal catheter, marked so that it can be introduced to a little above the bifurcation. First the mucus is aspirated into a small glass bowl and then oxygen insufflated. The pressure is regulated by a water valve. The pumping of oxygen (about thirty to forty times a minute) is only to be stopped when the child has obtained a healthy colour, and the catheter only removed when the child breathes regularly and spontaneously. Artificial respiration by means of this apparatus is supposed to act better if the child's breathing has completely stopped.

'Engelmann's⁴ method of insufflation of oxygen at a pressure aims at expansion of the infantile lung without catheterization of the trachea. Von Tiegel's apparatus (figure) consists of an ordinary oxygen cylinder with a simple water valve and a suitable face mask.

Von Tiegel's 'over-pressure apparatus' (1911).

This is so constructed that it can be applied to the face by means of a hermetically closing rubber ring. A relatively large rubber ball is screwed to the top of the mask, and communicates with it through a wide opening. A piece of tube is attached to the interior of the mask, and through this the stream of gas is conducted from the cylinder to the ball. From here it is partly inspired, and is partly mixed with the expired air, together with which it passes through an outlet in the lower part of the mask into a tube, and from thence into a water pressure regulator. This consists of a simple metal tube that is placed in a receptacle filled with water and provided with a centimetre scale. According to the depth of immersion of the metal tube the pressure can be varied in the whole system to a desired point. Quite a small pressure (2 to 3 cm. water) is sufficient to start respiration.'

- 1 Von Reuss AR. *The diseases of the newborn*. London: John Bale, Sons and Danielsson, 1921:286.
- 2 Gregory GA, Kilterman JA, Phibbs RH, Tooley WH, Hamilton WK. Treatment of idiopathic respiratory distress syndrome with continuous positive airway pressure. *N Engl J Med* 1971;284:1333-40.
- 3 Hoerder C. Wesen und Bekämpfungsmethoden der Asphyxia neonatorum. *Med Klin* 1909;44:1657-61.
- 4 Engelmann F. Die Sauerstoffdruckatmung zur Bekämpfung des Scheintodes Neugeborener. *Zentralbl Gynakol* 1911; 35:7-13.

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