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RESPIRATORY SURGICAL EMERGENCIES IN NEONATES

Essay.

Submitted for partial fulfillment of master degree In ANAESTHESIOLOGY

By Mohamed Saad El Din Tolba (M.B., B.Ch., Menoufiya University)

Supervisors

Prof. Dr. Samy Mohamed Hasib

Professor of Anaesthesiology, Faculty of Medicine, Al-Azhar University

Prof. Dr. Omar Abd El-Aleem Omar

Assistant Professor and Head of Anaesthesiology Dept., Faculty of Medicine, Menoufiya University

Dr. Mohamed Helmy Afifi

Lecturer of Anaesthesiology Faculty of Medicine, Menoufiya University

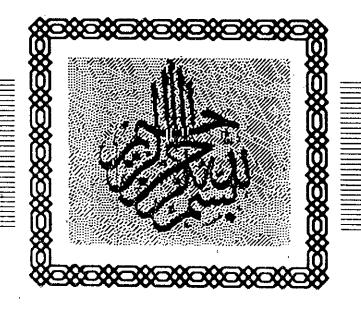
FACULTY OF MEDICINE MENOUFIYA UNIVERSITY

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مر الاستاز الدكتور: سا وقريب ما وقريب

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رخامئ فضاء الله يؤتيه من يشاء والله خو الفضاء المخليم

صدق الله الغظيم

الآية ٢٠١ سورة الحديد القرآن الكريم To my Beloved Family

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INTRODUCTION

The neonatal period, which encompasses the first month of extrauterine life, challenges the newborn infant in several respects. Once separated from the placenta, the newborn infant must function independently to adapt to the new environment. This adaptation involves anatomic, physiologic, and pharmacologic changes to maintain homeostasis and ensure the infant's survival. Thus the anesthesiologist must understand the principles of neonatal anesthesia and surgery, the normal course of development, and the pathophysiology of neonatal disease states (Davis, 1996).

Most neonatal lesions require urgent intervention. Infants born with congenital anomalies may show signs of respiratory distress and gastrointestinal obstruction or have multiple symptoms, indicating multiple organ pathology.

The common neonatal lesions interfering with normal ventilation include choanal atresia, Pierre Robin Syndrome, cystic hygroma, tracheoesophageal fistula, congenital diaphragmatic hernia and congenital lobar emphysema (Davis, 1996).

CHAPTER I

ANATOMICAL DIFFERENCE BETWEEN NEWBORN AND ADULT

Body Size:

A normal newborn weighing 3 kg is 1/3.3 the length of an adult but 1/9 the body surface area of the adult and 1/21 the weight of the adult. Of these body measurements, body surface area (BSA) is the most important because it closely parallels variations in basal metabolic rate measured in kilocalories per hour per square meter. For this reason, BSA is considered a better criterion than age or weight in judging basal fluid and nutritional requirements (Vaughan, 1987).

Upper Airway:

The neonate has a relatively large head and a short neck. The larynx lies opposite the lower border of the vertebral body of C4 and does not reach the adult position of C5-6 until 4 years of age.

The epiglottis is inclined to the posterior pharyngeal wall at an angle of 45° and the glottis is in a more anterior position than in the adult. The tongue is relatively large. This combination of a high forward-looking larynx and a large

tongue makes endotracheal intubation difficult if using a curved laryngoscope with the blade placed in the vallecula.

A straight blade of the Magill type with the tip posterior to the epiglottis at the anterior commisure gives optimum conditions for endorracheal intubation. By one year of age changes towards the adult position have occurred so that either method of intubation is satisfactory.

The narrowest part of the airway in neonates is the cricoid ring which is complete and may not accept an endotracheal tube which has passed through the glottis. Minimal oedema at the cricoid ring may reduce the airway by up to 60% in the neonate. In the adult, an endotracheal tube that passes the vocal cords will readily pass into the trachea, as the glottic opening is the narrowest portion of the larynx. In neonate, the trachea is about 4 cm in length but its length in adult is 12 cm. The trachea of the neonate divides at equal angles, so endotracheal tube can equally enter the right or left bronchus. But in adult, the right bronchus is in more line with the trachea than the left bronchus, so endotracheal tube can pass easily into the right bronchus (Negus, 1979).

The following figure shows the difference between the adult larynx and infant larynx (From Coté and Todres, 1993).

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