

J. Perinat. Med.
4 (1976) 261

Prenatal prediction of respiratory distress syndrome

Measurement of surface properties and Lecithin/Sphingomyelin ratio in human amniotic fluid

P. Krieglsteiner, R. Schneider, H. Köpcke, W. Tölle, J. Johannigmann, G. Blümel

Department of Experimental Surgery, Department of Obstetrics and Gynecology,
and Department of Anesthesiology of the "Technische Universität München"

The postnatal changes of the lung in the neonatal respiratory distress syndrome (RDS) resemble in their pathological appearance [52] to a large extent those seen in adult shock lung [6, 23, 27, 38].

In addition to neurological [22] and morphological [54] immaturity, RDS is primarily caused by a lack of surface active substances [43].

The various constituents of surfactant, such as protein, mucopolysaccharides, electrolytes and phospholipids form a complex biological system [53] the sum of which ensures alveolar stability [30].

Phospholipids are considered to be most effective fraction [14, 15, 16, 18]. They enter the amniotic fluid and thus are available for diagnostic procedures which form the basis for all conventional assays for pulmonary maturity [summarized in 2, 40, 50].

Among these methods the determination of the L/S ratio according to GLUCK [17] is the most widely used [3, 4, 9, 10, 11, 12, 13, 19, 21, 25, 26, 31, 34, 46, 48]. With few exceptions [39] it is undisputed in its predictive power. Therefore, the determination of the lecithin/sphingomyelin ratio (L/S ratio) is the method with which others have to be compared [5, 7, 29, 33, 37, 41, 42, 45, 49, 51].

Curriculum vitae

PETER KRIEGLSTEINER, MD, was born in 1943 in Eger/CSR. High school at Regensburg, study of medicine at the University of Munich. State Examination in 1969, MD graduation in 1970. Since 1970 at the department of Gynecology and Obstetrics of the "Technische Universität", Munich. In 1975 he was certified as a specialist in gynecology and obstetrics. Since 1975 in laboratory research together with the staff of Prof. G. BLÜMEL, "Institut für Experimentelle Chirurgie der Technischen Universität", Munich.



The function of the total fetal surfactant system can be judged by determining the surface tension of amniotic fluid with the WILHELMY balance [28, 32, 35, 36, 44].

This study will describe the possibilities of the prenatal prediction of RDS by biomechanical surface activity measurements in comparison to the L/S ratio.