

# This Week's Citation Classic

Warkany J, Monroe B B & Sutherland B S. Intrauterine growth retardation.

*Amer. J. Dis. Child.* 102:249-79, 1961.

[Children's Hosp. Res. Found, and Dept. Pediat., Univ. Cincinnati, Coll. Med., Cincinnati, OH]

The concept of intrauterine growth retardation aided in differentiation of premature and pseudopremature small neonates is presented. The article illustrates how a long known phenomenon of human pathology can be concealed by terminological policies and be rediscovered by mothers' statements and animal experiments. [The *SCI*<sup>®</sup> indicates that this paper has been cited over 140 times since 1961.]

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July 18, 1979

"It has long been known that some children are born undersized and underweight for their gestational age. Obstetricians knew this and spoke of 'microsomia' or 'placental insufficiency,' but many physicians paid no attention to the condition because they had little confidence in mothers' memories and estimates of pregnancy, and so they called small newborn babies simply prematures. This terminology generally persisted and in 1919 A. Ylppö<sup>1</sup>, a pioneer in the treatment of premature babies, suggested that all new borns weighing less than 2500g be considered prematures, irrespective of their gestational age, and be given the care required by infants born too early.<sup>1</sup> Owing to this intentional misnomer, no distinction was made subsequently between immature (pseudopremature) and truly premature infants. This probably benefited the immatures but impeded research on etiology of microsomia and on the postnatal outcome of the condition.

"My attention was drawn to this shortcoming by some mothers of handicapped children who stated that their children had been small at birth and were called prematures by their pediatricians although they had been carried 9 months.

Repeatedly they, stated that their pregnancies had been unusual since there was no increase in size of their abdomens, that fetal activity in utero was feeble, and that the afterbirths were small. At the same time, I was taught by teratologic animal experiments in which times of fertilization and birth weights were accurately determined that intrauterine growth could be markedly retarded by adverse gestational conditions. This made me believe the mothers rather than the physicians who labeled all underweight newborns 'prematures.' Subsequently, we reviewed 27 of our cases, which according to mothers' histories, had marked intrauterine growth retardation (IUGR) and searched the literature for information about incidence, etiology, family and pregnancy histories, patients' properties, associated anomalies, placentas and outcome of IUGR. The prognosis of the children seen by us was generally poor but we realized that this could be due to selection. We pointed out the need for intensive and longitudinal studies of unselected cases of IUGR to learn more about the causes of slow prenatal growth and postnatal fate. Our article appeared at a favorable time, when pediatricians recognized that differentiation of prematures and pseudoprematures could be valuable, and a WHO Expert Committee on Maternal and Child Health recommended reassessment of the international definition of prematurity.<sup>2</sup> This was followed by a flood of publications of exact and detailed measurements, chemical determinations, and statistics. New names were coined for children with IUGR such as 'small for date babies,' 'dysmatures,' etc.

"In retrospect it seems that our article has been frequently quoted because it appeared at a time when neonatologists began intensive work on babies with very low birth weights which necessitated differentiation between normal and retarded prenatal growth."

1. Ylppö A. Zur Physiologic Klinik und zum Schicksal der Frühgeborenen. *Z. Kinderheilkd.* 24:1-110, 1919.
2. World Health Organization. Expert Committee on Maternal and Child Health. Technical Report Service, 1961. p. 217.