Health Science Research Grants（Research on Children and Families）
Report on Assigned Section

Physiological and Pathological Study on Sudden Infant Death Syndrome (SIDS)
--Physiological Definition of Arousal Response

Appointed Researchers: Andre Kahn (Professor, Brussels Free University Pediatric Children's Hospital)
Toshiko Sawaguchi (Associate Professor, Department of Legal Medicine, Tokyo Women's Medical University) (Visiteng Professor, Brussels Free University Pediatric Children's Hospital)
Co researchers: Jose Groswasser, Patricia Franco (Brussels Free University Pediatric Children's Hospital)

Summary of the Research:

A defective arousal reaction has been implicated in the development of sudden infant death syndrome(SIDS). The implications of higher arousal thresholds for SIDS are substantial. However, there is no established definition for the arousal response. In examining the participation of a defective arousal reaction in SIDS, there is a need for a sounder logical basis for discussion, which will lead to the early establishment of a physiological definition of the arousal response that will be internationally accepted. For this reason, a pediatric "Wake-up Club" was created to discuss the physiological definition of the arousal response. The first international conference was held in 1998, in which the definition of EEG and two or more non-EEG parameters (occurrence of motor activity, increase in heart rate, respiration, including increases in amplitude and/or respiratory frequency) for infants over one month but younger than 2 years were selected for preliminary consensus at that time. The details of these definitions will be discussed at future Wake-Up Conferences.

A. Aim

The objects of this joint research project are outlined as follows: tissue blocks will be collected retrospectively from those SIDS and non-SIDS cases that have been subjected to prospective physiological analysis; these blocks will then be used for pathological analyses so that the aforementioned physiological data may be linked with the pathological data obtained from these tissue samples. In this project, the Belgian group will assume responsibility for preparing physiological data and collecting the pathological blocks.

In 1998, the Japanese group requested that their Belgian colleagues supply physiological data (those related to apnea and arousal responses). A defective arousal reaction has been implicated in the development of sudden infant death syndrome (SIDS) (1,2,3,4). The implications of higher arousal thresholds for SIDS are substantial. Therefore this request appeared to be logical. In preparing the physiological data related to the arousal response, however, it was realized that the physiological definition of the response had not been established. The problem was recognized: the absence of a solid basis on which the data could rest. It should be noted that the establishment of the definition of the arousal response is essential, not only in this joint research project but also in the sleep physiology of children. Thus the objective of