

159 Alteration of cerebral blood flow in the fetal sheep measured by positron emission tomography during 10min sustained total asphyxia. M.Iwamoto, T.Watanabe, J.Murotsuki, H.Endoh, N.Akiyama, K.Okamura, A.Yajima, Dept. Obst. and Gynec. Tohoku Univ. Sch. Med. Miyagi.

We utilized PET (positron emission tomography) to measure cerebral blood flow (CBF) in the fetal sheep during 10min total asphyxia induced by sustained cord compression. The CBF was determined after intravenous injection of H₂O labeled with the positron-emitting isotope ¹⁵O.

The CBF in the fetal sheep increased from 58.3ml/100g/min during the control period to 64.2, 67.9ml/100g/min during the sustained cord compression at 1 and 5min, respectively. But it significantly fell to 33.0ml/100g/min at 9min and it remained low (32.4ml/100g/min) 25min after cord compression ceased, although carotid blood flow volume returned to that of control. It suggests that the fetal own protective mechanism had worn out at that time.

160 Morphometrical evaluation of the lung and liver in the cases associated with hyaline membrane disease. T.Fujimoto, T.Ikemoto, M.Yuasa, Dept. and Gynec., Shakaihoken Kobe Central Hosp., Hyogo.

To investigate the causes of the hyaline membrane disease (HMD), the development of the lung and liver of newborns were histometrically evaluated.

Materials & methods 29 autopsy newborns who died within 5days after birth were examined. Eleven of thier newborns histopathologically showed HMD. The development of the terminal air space and liver cell plate were measured histometrically.

Results The degree of the development of the terminal air space and liver cell plate variously differed. Considering the gestational age, the development of both terminal air space and liver cell plate of the HMD cases were more retarded than the development of the non-HMD cases. Considering the body weight, the development of both terminal air space and liver cell plate were more retarded than the development of the non-HMD cases.

Conclusion HMD cases were associated with morphological growth retardation of the lung and liver. Their morphological growth retardations implies functional immaturity of both organs.

161 The Maturation Process of Premature infants on Trendgram of Electroencephalogram.

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The present study performed in 10 premature infants who were born between 28-30 weeks of gestation. Our monitoring system for neonates included electroencephalograph (EEG), electromyograph and trendgram of EEG. The 24 hours monitoring was carried out within several days after delivery and repeated every 7 days. The purpose of this study was to determine the maturation process of high central nerve system on trendgram of EEG.

- 1) The patterns of trendgram of EEG on REM stage before 34 weeks of gestation were that high amplitude slow waves and spindle shaped bursts of fast waves (13-20c/s) were mixed. After 35 weeks of gestation, spindle like fast waves were disappeared and slow waves tended to that of low amplitude and high frequency.
- 2) The patterns of trendgram on NREM (trace discontinue / trace alternant) stage before 36 weeks of gestation were similar to those of REM stage before 34 weeks. After 37 weeks of gestation, spindle like fast waves were disappeared and slow waves with high amplitude were inserted in the stage of trace alternant.
- 3) It suggested the neocortical activity that disappearance of spindle like fast waves and presence of slow waves of NREM stage (trace alternant) after 37 weeks of gestation.