

The origin of the influence of frequency on the relationship between V_{TZ} and V_T is not established by these studies. One explanation is that the distribution of a V_T within the airways is frequency dependent, such that the gas volume increment within that part of the lungs between the electrodes is less at higher frequencies. This explanation is consistent with the observation by other investigators (5, 6) that distribution of ventilation during HFV varies with frequency. Another explanation involves the possibility that Z_T is influenced by variations in pulmonary blood volume accompanying each high frequency inspiration. As predicted by Olsson's equation 2, an increment in pulmonary blood volume (ΔV_f) will result in a negative impedance deflection. If either the magnitude or regional distribution of fluctuations in pulmonary blood volume accompanying high frequency inspirations were frequency dependent, the relationship between V_{TZ} and V_T would also be influenced by frequency.

V_{TZ}/V_T was not significantly dependent on either V_T or elapsed time after the first study of a session. This technique appears reliable over a wide range of V_T . Its sensitivity for estimating V_T as small as 15% of dead space is the result of the signal averaging process that removes variations in the impedance signal not correlated with HFV. The absence of any significant drift in V_{TZ}/V_T during studies of up to 3 h indicates the stability of the electrode-skin interface.

The results of this investigation establish impedance plethysmography as a potentially valuable tool in clinical applications of HFV, particularly among newborn infants. Clinical studies and intensive care monitoring of this group of patients are especially dependent on the availability of measuring techniques

which are noninvasive and unobtrusive, both features of impedance plethysmography.

These studies provide convincing evidence that impedance plethysmography is a valid technique to measure V_T during HFV delivered by a flow interrupter to lambs with normal lungs. Additional studies are needed to confirm the reliability of the technique with high frequency oscillatory ventilation and in the presence of lung disease.

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Announcement

1988 Meeting of the European Society for Pediatric Research

The meeting will take place June 19-22, 1988 at the University Center, Blindern, Oslo, Norway. It will include plenary sessions devoted to neonatology, cardiology, and cellular growth factors. Organized symposia topics will include: oxygen toxicity and free radicals, Reye's syndrome, surfactant, extracorporeal membrane oxygenation, high frequency ventilation, mineral metabolism, prevention and management of pain, cellular growth factors, and fetal echocardiography.

Official language for the meeting will be English.

Deadline for abstracts: February 15, 1988; **deadline for early registration:** March 15, 1988.

For more information contact the President: Professor Sverre Halvorsen, Department of Pediatrics, Ullevål Hospital, 0407 Oslo 4, Norway, Phone: (47 2) 46 18 70. or Organizing Secretariat, ESPR 1988, Congress Service, PO Box 55, Blindern, 0313 Oslo 3, Norway.