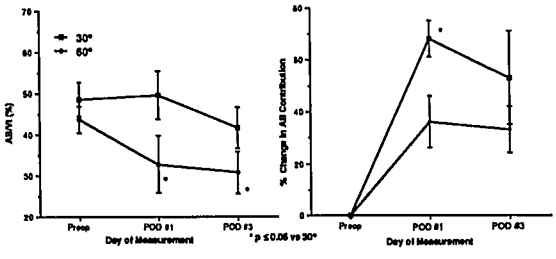
Title: EFFECT OF POSTURAL CHANGES ON POST-THORACOTOMY(T) RESPIRATORY MUSCLE MECHANICS DURING INCENTIVE SPIROMETRY(IS)

Author: J.A. Melendez, M.D., R. Alagesan, FFARCSI, C. Weissman, M.D., R. Reinsel, Ph.D., M. Burt, M.D. Ph.D.
Affil.: Anes. Depts., Memorial Sloan-Kettering Cancer Center, Cornell Medical College, New York, N.Y. 10021

Classically, post-T patients have been nursed in the upright posture due to demonstrable improvements in respiratory efficiency. However, the optimal posture for the performance of IS has not been defined. This study was undertaken to identify the optimal IS posture by examining the alterations of IS respiratory muscle mechanics and compartmental displacement brought about by a change in torso angle.
16 patients scheduled for T were studied with IRB informed consent. Respiratory inductance plethysmography was used to measure tidal volume (V_t), inspiratory time (T_i), inspiratory duty cycle (T_i/T), and mean inspiratory flow (V_t/T_i), abdominal volume contribution/tidal volume ratio(AB/V_t) during both quiet breathing and IS. Patients were randomly assigned to perform IS at an incline angle of either 30° or 60°. Studies were repeated on postop day 1 and 3. Results are expressed as mean ± SEM. Data was analyzed using repeated measures ANOVA with appropriate post-hoc tests. $P \leq 0.05$ was considered significant.
IS resulted in a decrease of AB/V_t producing an reversal of the normal compartmental displacement relation observed during quiet breathing. Increasing the postop IS torso angle from 30° to 60° yielded further reduction of AB/V_t, and AB. In addition, the decrease in the postop IS V_t was results from a reduction in T_i and T_i/T.
We conclude that the decrease in postop IS V_t was due to inhibition of inspiration by pain reflexes in conjunction with evidence of abnormalities in the relaxation characteristics of the system. Postop IS elicited diaphragmatic dysfunction and possibly failed to provide expansion of dependent lung segments. Unexpectedly, evidence of improvement in diaphragmatic excursion, and hence better lower lobe aeration, was observed with a reduction in the angle of torso inclination from 60° to 30°.



A1177

TITLE: INTRAOPERATIVE FIO_2 AND THE DEVELOPMENT OF MITOMYCIN-INDUCED POST-OPERATIVE INTERSTITIAL PNEUMONITIS

AUTHORS: D Desiderio MD, R Alagesan MD, M Fischer MD, R Bedford MD, V Rusch MD.
AFFILIATION: Anes & Surg Depts. Memorial Sloan-Kettering, Cornell Univ. NY, NY 10021

Mitomycin is a chemotherapeutic agent commonly used for patients with metastatic lung cancer. It has been linked with postop interstitial pneumonitis (IP) because it forms superoxide radicals in the presence of elevated oxygen tensions[1]. This study examines the relationship between anesthetic FiO_2 and IP. 56 informed, consenting patients with metastatic lung cancer underwent thoracotomy after mitomycin therapy. 5 patients developed IP (Group IP), whereas 51 did not (Group No IP). Periop records of the patients were then reviewed in an attempt to identify risk factors associated with postop IP. The Table summarizes our comparison of the 2 groups. It is clear that the IP patients had significant pulmonary abnormalities preop and that the likelihood of developing IP after mitomycin treatment was not related to intraop oxygen administration. The higher FIO_2's and postop mechanical ventilation were necessitated by preexisting lung disease. We conclude that elevated FIO_2 may not contribute to IP in mitomycin-treated patients.

Ref: Pritsos CA et al. Cancer Research 46:-3528-32;1986.

PARAMETER	GROUP IP	GROUP NO IP
AGE (YRS)*	52.4± 5	52.8±9
PRE-OP DLco (ml/mmHg/min)*	11.6±2.4	16.5±4.7++
ANESTHESIA TIME (MIN)*	232±59	220±58
DOUBLE LUMEN+ TUBE	40%	37%
FIO_2>0.3+	100%	90%
FIO_2=1 FOR MORE THAN 50% OF ANESTHESIA TIME+	20%	27%
FIO_2=1 FOR LESS THAN 50% OF ANESTHESIA TIME+	80%	73%
INTRA-OPERATIVE O_2 SAT<94%+	60%	29%
NEED FOR POSTOP VENTILATOR+	40%	10%

* Values = mean ± S.D.
\+ Percentage of patients in each group
++ P<0.05