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Title: Chest wall mechanics during induction of anesthesia

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Body: BACKGROUND: It has been reported that anesthesia may be associated to variation in chest wall (CW) mechanics. We have developed a CW scanning system (CWSS) based on self-mixing laser interferometers that allows the measure of relative displacement. If this approach is combined with Forced Oscillation Technique (FOT) it allows to infer CW mechanics. METHODS: Five patients were studied during anesthesia induction at different stages, while they were submitted to a sinusoidal pressure forcing at the mouth with components at 5, 11 and 19 Hz. At each step FRC (GE; Engstrom CareStation) and CW mechanics (phase displacement among these points and the pressure stimulus) were estimated by spectral technique. RESULTS: figure 1 shows results at 11 Hz. At all steps rib cage and abdomen the pressure stimulus travels faster in the rib cage than in the abdomen, likely because of the high inertia of the latter. FRC presents a minimum during sedation, then it increased during pressure support and it reaches physiological values after the recruitment maneuver. The marked variation in ϕ induced by sedation on the lower rib cage may be related to the reduction in FRC.