

**SCA 106****EFFECT OF DIFFERENT RECUMBENT POSITIONS ON ARTERIAL OXYGENATION IN VALVULAR HEART DISEASE PATIENTS WITH CARDIOMEGALY**Puri GD, Dutta A, Thingum SS<sup>1</sup>, Chari P<sup>2</sup>*Departments of Cardiothoracic Surgery<sup>1</sup> and Anaesthesia<sup>2</sup>, PGIMER, Chandigarh, UT*

Chamber enlargements of heart can affect lung functions by direct compression of lung or airways with attendant decreased ventilation<sup>1</sup> and also due to influence on pulmonary vascular system such as reduced caliber of left lower lobe vessels in supine posture<sup>2</sup>.

**Methods:** Following institutional ethical committee approval thirty premedicated valvular heart disease patients of either sex having cardiothoracic (CT) ratio of. 0.5 or more on Cxray , planned for cardiac surgery were studied to evaluate the effect of different posture in recumbent position on arterial blood gases. Arterial blood gas analysis was performed in supine, left lateral and right lateral postures in random sequence after keeping the patient in particular posture for fifteen minutes. Patients received oxygen supplementation at FiO<sub>2</sub> of 0.35 during the whole study period. PaO<sub>2</sub> and saturations in three different positions were compared and the difference related to left ventricular end diastolic diameter (LVEDD) obtained by Echocardiography preoperatively and the CT ratio.

**Results:** Arterial oxygen tension and saturations were highest in right lateral posture (Table 1). These were significantly higher in right lateral posture (PaO<sub>2</sub> 111.8 ± 29 mmHg SaO<sub>2</sub> 97.7 ± 1.5 %) as compared to left lateral posture (PaO<sub>2</sub> 100 ± 29 mmHg, SaO<sub>2</sub> 97.1 ± 1.7 %) [p<0.01, paired 't' test]. These were also significantly higher in right lateral posture as compared to supine posture (PaO<sub>2</sub> 101 ± 29 mmHg, SaO<sub>2</sub> 97.2 ± 2.3%) [p<0.01, paired 't' test]. The difference between left lateral posture and supine was not significant (p>0.05). The difference in oxygen saturations between right and left lateral

postures was significantly related to LVEDD (r=0.55 Pearson correlation coefficient) but the relation was not significant with CT ratio (r=0.35).

**Discussion:** The decrease in saturation in left lateral posture may be due to lung volume and airway compression of left lung by the enlarged heart. This compression decreases ventilation of the left lung when this dependent lung is being perfused maximally in left lateral position. Enlarged left ventricular grows in left hemi thorax resulting in predominant left lung compression. In right lateral posture the effect of left ventricular enlargement on lung volumes is decreased. Absence of relation of change in saturation from right to left lateral position with CT ratio may be because some of the patients had cardiomegaly on Cxray because of enlargements of cardiac chambers other than left ventricle which did not result in improvement on attaining right lateral posture.

**Conclusion:** Oxygenation in valvular heart disease with cardiomegaly is best in right lateral posture when lying down in bed. Patients with left ventricular enlargements should be encouraged to lie in right lateral posture when in bed.

Table 1

	Supine	Left Lateral	Right Lateral
PaO <sub>2</sub> ± sd mmHg	101 ± 29	100 ± 29	111.8 ± 29*
SpO <sub>2</sub> ± sd %	97.2 ± 2.3	97.1 ± 1.7	97.7 ± 1.5 *

\* p<0.01 as compared to Supine and Left Lateral

**References:**

- Alexander MSM, Peters AM, Cleland J, Lavender JP Impaired left lower lobe ventilation in patients with cardiomegaly. An Isotope study of Mechanisms Chest 1992; 101:1189-93
- Beckman CF, Lewin DC, Ulreich S Cardiomegaly as a cause of non-uniform pulmonary artery perfusion Am J Roentgenol 1977; 129:661-66