EVALUATION OF FVC AND FEV1 FOR ASSESSMENT OF VENTILATORY DEFECT IN OBESE INDIVIDUALS

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Abstracts: **Background & objectives**: Obesity as one of the most common emerging disease and is important cause of respiratory problem in young individuals around 40% of adults worldwide are either overweight or obese. By assessing the respiratory function with the help of spirometry we can assess the respiratory defect in obese and also show the impact of obesity on respiratory system. **Materials and Methods**: we perform the pulmonary function tests (PFT) in various age group individuals by jaeger machine and compare it with the predicted value. R**esults**: Decreased in Forced vital capacity (FVC) and Forced expiratory volume in first one second (FEV1) in obese individuals. **Interpretation &Conclusion:** Decreased respiratory functions in obese individual

Key Words: Body mass index, Pulmonary function test, Forced vital capacity (FVC) and Forced expiratory volume.

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Introduction:

Obesity is a chronic medical condition characterized by an excessive accumulation of fat on human body that causes a generalized increase in body mass. Body mass index (BMI) is used to measure obesity which is a reflection of weight and height. BMI) is calculated as the weight in kilograms divided by the square of the height in meters (BMI = weight (kg)/height (m2)). The world Health Organization (WHO) classified obesity using BMI cut-off values of 25 and 30kg/m2. BMI of 18 to 24.9 kg/m2 is considered normal weight, a BMI of 25.0-29.9 kg/m2 is considered overweight and a BMI of 30 kg/m2 or higher is considered obesity (1).

Obese people are at increased risk of respiratory symptoms, such as breathlessness, particularly during exercise, even if they have no obvious respiratory illness (2, 3). Obesity directly effect on respiratory well-being, since it increases oxygen consumption and carbon dioxide production, while at the same time it stiffens the respiratory system and increases the mechanical work needed for breathing.The association between obesity and asthma has also raised new concerns about whether the mechanical effects of obesity on the respiratory system contribute to airway dysfunction that could induce or worsen asthma.(4)

Material and Methods:

Study was conducted on 50 obese patients between age group of 30 -60 years who were referred for spirometry as a part of pre operative evaluation with no active or significant respiratory complaint. Actively infectious cases were not included in the study.Pulmonary function tests (PFT) has been performed on jaeger machine with body box in Department of Respiratory Medicine of Sri Aurobindo Medical College and Post Graduate Institute, Indore MP by qualified technician with assistance of physiologist and reported in consent with pulmonologist

Result: There is statistically highly significant decline in Forced vital capacity (FVC) and Forced expiratory volume in first one second (FEV1) in obese when compared to normal values of healthy individuals by Udwadia index while the ratio of FEVI/FVC remain unchanged.

Table:1

	Mean	**±SD**
Age	**46.34**	**9.052252**
Height	**166.9**	**9.7839**
Weight	**128.33**	**25.6251**
BMI	**45.22**	**7.1133**

	Predicted value	Observed value	't' value	'p' value
FVC	**3.343 +/- 0.61**	**2.93 +/- 0.66**	**3.2495**	**0.0016 (VS)**
FEV1	**2.73 +/- 0.499**	**2.36 +/- 0.58**	**3.4195**	**0.0009 (ES)**
FEV1/FVC	**81.56 +/- 2.61**	**80.44 +/- 5.436**	**1.3133**	**0.1921 (NS)**

Table:2

Discussion:

Obesity may have effects on pulmonary function tests(PFT) including impairment on pulmonary function testing, small airway dysfunction and expiratory flow limitation, alterations in respiratory mechanics, decreased chest wall and lung compliance, decreased respiratory muscle strength and endurance, decreased pulmonary gas exchange, lower control of breathing, and limitations in exercise capacity (5-8).PFT is an important tool in the investigation and monitoring of patients with respiratory disorder. They provide important information relating to the large and small airways, the pulmonary parenchyma and the size and integrity of the pulmonary capillary bed. Although they do not provide a diagnosis per se, different patterns of abnormalities are seen in various respiratory diseases which help to establish a diagnosis (9).

Calculation of FEV1/FVC allows the identification of obstructive or restrictive ventilatory defects. A FEV1/FVC < 70 % where FEV1 is reduced more than FVC signifies an obstructive defect. Common examples of obstructive defects include chronic obstructive pulmonary disease (COPD) and asthma. The FEV1 can be expressed as a percentage of the predictive value which shows severity of the impairment. An FEV1/FVC > 70% where FVC is reduced more so than FEV1 is seen in restrictive defects such as interstitial lung diseases (e.g. idiopathic pulmonary fibrosis) and chest wall deformities(10)

Conclusion:

There is a decline in different aspects of respiratory functions due to obesity. Dynamic spirometry commonly revels a decline in FVC, suggesting restrictive disorder in most obese individuals despite being asymptomatic. Spirometric studies also suggest increased resistance of airways along with mild increase in FEV1 or even normal FEV1 values suggestive of a co-existing obstructive ventilatory defect. So by this study we conclude that PFT can use in detecting what are the respiratory changes occurring in obese person and detection at early stages can help us to improve respiratory functions

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