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**Title:** The evaluation of diaphragmatic motion by M-mod ultrasonography in chronic obstructive lung diseases

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**Body:** To determine the role of M-mod ultrasonography(US) in evaluation of diaphragmatic function in control and COPD patients and the correlation between pulmonary function tests(PFT) and diaphragmatic function in COPD patients. Hemidiaphragmatic excursion during tidal ventilation(TV) and deep breathing(DB) and diaphragmatic thickness(DT) were measured by M-mode US in study population in 2009.Diaphragmatic motion in both groups and the correlation between PFT and diaphragmatic motion was evaluated statistically. We included 76 COPD patients and 30 control subjects.Mean diaphragmatic motion during TV was  $2.21\pm 0.56$  cm in control group and it was  $1.65\pm 0.66$  cm in COPD patients.The difference was statistically significant.During DB the mean diaphragmatic excursion was  $6.23\pm 0.74$  cm in control group and  $4.64\pm 1.34$  cm in COPD patients.Also the difference was statistically significant( $p<0.001$ ).COPD patients were classified into two groups according to severity of obstruction.Group A consisted of mild and moderate,group B enclosed severe and very severe obstruction.In group A,a moderate corelation between FEV1,FVC and diaphragmatic motion during TV was obtained.Also there was a good corelation between diaphragmatic motion during DB and FEV1,FEV1%,FVC,FVC% in this group.In group B,a moderate corelation between diaphragmatic motion during DB and MEP,MEP% was determined. M-mode ultrasonography is a non invasive and inexpensive method in evaluation of diaphragmatic motion.Diaphragmatic excursion was significantly lower in COPD patients than in control group.In mild and moderate obstructive COPD patients, a good corelation was confirmed between diaphragmatic motion during DB and FEV1,FEV1%,FVC, FVC%.