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Hyperbaric Oxygen Therapy Improves Myocardial Diastolic Function in Diabetic Patients.

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Myocardial diastolic dysfunction is the relaxation abnormality of ventricles that limits the diastolic filling and generally precedes diastolic heart failure. Diastolic dysfunction is a common finding in diabetes. Diabetic patients receive hyperbaric oxygen (HBO) therapy for non-healing lower extremity ulcers, and exposure to HBO therapy is known to influence cardiovascular functions. This study was designed to evaluate the effect of HBO therapy on myocardial diastolic function in diabetic patients. Thirty diabetic patients (18 male and 12 female, 59.9 +/- 10 years old), who were planning to undergo HBO therapy, were consecutively enrolled. Myocardial diastolic function was evaluated by pulsed wave Doppler echocardiography and tissue Doppler echocardiography before the first HBO therapy and after the tenth HBO therapy session. HBO therapy improved the relaxation capability of left ventricular myocardium, which was reflected by reduction in E wave deceleration time of mitral valve inflow (286.1 +/- 65.8 msec vs 214.3 +/- 32.1 msec, $p < 0.05$). HBO therapy also affected favorably the diastolic filling dynamics of right ventricle, which was partially reflected by the changes in E wave peak velocity of tricuspid valve inflow (0.48 +/- 0.07 m/sec vs 0.46 +/- 0.09 m/sec, $p < 0.05$). Tissue Doppler parameters of mitral lateral annulus, which are better correlated with ventricular relaxation, tended to be improved after HBO therapy, but the degree of improvement was not statistically significant. ***In conclusion, we suggest that HBO therapy may improve the myocardial diastolic function of diabetic patients when applied repetitively.***

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