Remifentanil does not impair left ventricular systolic and diastolic function in young healthy patients

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BACKGROUND
Experimental studies and investigations in patients with cardiac diseases suggest that opioids at clinical concentrations have no important direct effect on myocardial relaxation and contractility. In vivo data on the effect of remifentanil on myocardial function in humans are scarce. This study aimed to investigate the effects of remifentanil on left ventricular (LV) function in young healthy humans by transthoracic echocardiography (TTE). We hypothesized that remifentanil does not impair systolic, diastolic LV function, or both.

METHODS
Twelve individuals (aged 18-48 yr) without any history or signs of cardiovascular disease and undergoing minor surgical procedures under general anaesthesia were studied. Echocardiographic examinations were performed in the spontaneously breathing subjects before (baseline) and during administration of remifentanil at a target effect-site concentration of 2 ng ml\(^{-1}\) by target-controlled infusion. Analysis of systolic function focused on fractional area change (FAC). Analysis of diastolic function focused on peak early diastolic velocity of the mitral annulus (e') and on transmitral peak flow velocity (E).

RESULTS
Remifentanil infusion at a target concentration of 2 ng ml\(^{-1}\) did not affect heart rate or arterial pressure. There was no evidence of systolic or diastolic dysfunction during remifentanil infusion, as the echocardiographic measure of systolic function (FAC) was similar to baseline, and measures of diastolic function remained unchanged (e') or improved slightly (E).

CONCLUSION
Continuous infusion of remifentanil in a clinically relevant concentration did not affect systolic and diastolic LV function in young healthy subjects during spontaneous breathing as indicated by TTE.