BMC Cardiovascular Disorders
Volume ٩, ٩ October ٢٠٠٩, Article number١٤٧١, Page٤٩

# Cardiac insulin-like growth factor-١ and cyclins gene expression in canine models of ischemic or overpacing cardiomyopathy

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View references (٣٨)

# Abstract

Background: Insulin-like growth factor-١ (IGF-١), transforming growth factor β (TGFβ) and cyclins are thought to play a role in myocardial hypertrophic response to insults. We investigated these signaling pathways in canine models of ischemic or overpacing-induced cardiomyopathy. Methods: Echocardiographic recordings and myocardial sampling for measurements of gene expressions of IGF-١, its receptor (IGF-١R), TGFβ and of cyclins A, B, D١, D٢, D٣ and E, were obtained in ٨ dogs with a healed myocardial infarction, ٨ dogs after ٧ weeks of overpacing and in ٧ healthy control dogs. Results: Ischemic cardiomyopathy was characterized by moderate left ventricular systolic dysfunction and eccentric hypertrophy, with increased expressions of IGF-١, IGF-١R and cyclins B, D١, D٣ and E. Tachycardiomyopathy was characterized by severe left ventricular systolic dysfunction and dilation with no identifiable hypertrophic response. In the latter model, only IGF-١ was overexpressed while IGF-١R, cyclins B, D١, D٣ and E stayed unchanged as compared to controls. The expressions of TGFβ, cyclins A and D٢ were comparable in the ٣ groups. The expression of IGF-١R was correlated with the thickness of the interventricular septum, in systole and diastole, and to cyclins B, D١, D٣ and E expression. Conclusion: These results agree with the notion that IGF-١/IGF-١R and cyclins are involved in the hypertrophic response observed in cardiomyopathies. © ٢٠٠٩ Mahmoudabady et al; licensee BioMed Central Ltd.

# Reaxys Database Information

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# Indexed Keywords

**EMTREE drug terms:** cyclin A; cyclin B; cyclin D١; cyclin D٢; cyclin D٣; cyclin E; cycline; somatomedin C; somatomedin C receptor; transforming growth factor beta

**EMTREE medical terms:** animal experiment; animal model; animal tissue; article; cardiomyopathy; controlled study; diastole; dog; echocardiography; gene expression; heart dilatation; heart hypertrophy; heart infarction; heart left ventricle; heart muscle; heart ventricle septum; ischemic heart disease; nonhuman; priority journal; protein expression; systole; systolic dysfunction

**MeSH:** Animals; Arrhythmias, Cardiac; Cardiac Pacing, Artificial; Cardiomyopathy, Dilated; Cardiomyopathy, Hypertrophic; Cyclins; Disease Models, Animal; Dogs; Echocardiography; Gene Expression Regulation; Insulin-Like Growth Factor I; Myocardial Ischemia; Myocardium; Polymerase Chain Reaction; Receptor, IGF Type ١; Transforming Growth Factor beta; Ventricular Dysfunction, Left
*Medline is the source for the MeSH terms of this document.*

**Chemicals and CAS Registry Numbers:** somatomedin C, ٦٧٧٦٣-٩٦-٦;Cyclins; Insulin-Like Growth Factor I, ٦٧٧٦٣-٩٦-٦; Receptor, IGF Type ١, ٢,٧,١٠,١; Transforming Growth Factor beta

**ISSN:** ١٤٧١٢٢٦١ **CODEN:** BCDMB **Source Type:** Journal **Original language:** English
**DOI:** ١٠,١١٨٦/١٤٧١-٢٢٦١-٩-٤٩ **PubMed ID:** ١٩٨١٨١٤٣ **Document Type:** Article