

2nd International Conference on **Endocrinology**

October 20-22, 2014 DoubleTree by Hilton Hotel Chicago-North Shore, USA

Silencing growth hormone receptor inhibits pancreatic ductal adenocarcinoma growth and metastasis

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Pancreatic cancer is one of the most lethal cancers. The five year survival rate is less than 1%. It is also the 4th leading cause of cancer related death. Increased growth hormone receptor (GHR) expression has been shown to enhance the risk of cancer in general and this pathway is a master regulator of key cellular functions like proliferation, apoptosis, differentiation, metastasis, etc. However, to date there is no available data on how GHR promotes pancreatic ductal adenocarcinoma pathogenesis. Here, we used an RNA interference approach targeted to GHR to determine whether targeting GHR is an effective method for controlling pancreatic ductal adenocarcinoma growth and metastasis. For this, we used an *in vitro* model system consisting of pancreatic cancer cells lines. GHR is upregulated in these cell lines and silencing GHR significantly reduced cell proliferation and viability. Inhibition of GHR also reduced the metastatic potential of pancreatic cancer cells, which was aided through decreased colony forming ability and reduced invasiveness. Flow cytometric and Western blot analyses revealed the induction of apoptosis in GHR silenced cells. GHR silencing affected PI3K/AKT, MEK/ERK, JAK/STAT, and mTOR signaling, as well as, epithelial to mesenchymal transition. Interestingly, silencing GHR also suppressed the expression of insulin receptor β and COX-2. Altogether, GHR silencing plays a major role in controlling the growth and metastasis of pancreatic cancer demonstrating that it could be a potential therapeutic target for pancreatic ductal adenocarcinoma.

Biography

Rajkumar Lakshmanaswamy received his PhD in Endocrinology from University of Madras. He did his postdoctoral studies at the University of California at Berkeley, CA. Currently he is the Director of the Center of Excellence in Cancer Research, at Texas Tech University Health Sciences Center at El Paso, TX. He has published more than 50 scientific articles in reputed journals and has been serving as an editorial board member of journals of repute.

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