

عنوان مقاله:

Effects of digoxin on cardiac iron content in rat model of iron overload

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نویسندگان:

Hamid Reza Nasri - Associate Professor, Cardiovascular Research Center, Institute of Basic and Clinical Physiology Sciences, Kerman University of Medical Sciences, Kerman, Iran

Beydolah Shahouzehi - Endocrinology and Metabolism Research Center, Institute of Basic and Clinical Physiology Sciences, Kerman University of Medical Sciences, Kerman, Iran

Yaser Masoumi-Ardakani - Physiology Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran

Maryam Iranpour - Associate Professor, Department of Pathology, Kerman University of Medical Sciences, Kerman, Iran

خلاصه مقاله:

BACKGROUND: Plasma iron excess can lead to iron accumulation in heart, kidney and liver. Heart failure is a clinical widespread syndrome. In thalassemia, iron overload cardiomyopathy is caused by iron accumulation in the heart that leads to cardiac damage and heart failure. Digoxin increases the intracellular sodium concentration by inhibition of Na⁺/K⁺-ATPase that affects Na⁺/Ca²⁺ exchanger (NCX), which raises intracellular calcium and thus attenuates heart failure. The mechanism of iron uptake into cardiomyocytes is not exactly understood. **METHODS:** We assessed the effect of different concentrations of digoxin on cardiac iron content in rat model of iron overload. Digoxin had been administrated intraperitoneally (IP) for one week before main study began to assure increased digoxin levels. Group 1 received four IP injections of iron-dextran (12.5mg/100g body weight) every 5 days evenly distributed over 20 days. Groups 2-4 received 0.5, 1 and 5 mg/kg/day IP digoxin, respectively. Last three groups 5-7 received iron-dextran as group 1 and digoxin concentrations 0.5, 1 and 5 mg/kg/day respectively. **RESULTS:** Cardiac iron contents were significantly higher in iron overload groups that received different concentrations (0.5, 1 and 5 mg/kg/day) of digoxin than their counterparts in control groups and this pattern was also observed in pathology assessment. **CONCLUSION:** It seems that digoxin plays an important role in iron transport into heart in iron overload state but exact mechanism of this phenomenon is not clear. L-type Ca²⁺ channels are good candidates that probably could be involved in iron accumulation in cardiomyocytes. Thus it would be better to reconsider digoxin administration in thalassemia and iron overload conditions

کلمات کلیدی:

Iron Overload, Digoxin, Iron Dextran Complex, Cardiac Iron Content

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