The Role of Oncogene in Mycobacteria-induced Antophagy in Human Macrophages

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Macrophages are the major immunocytes to initiate both innate and adaptive immune responses against Mycobacterium tuberculosis (Mtb), a causative agent of tuberculosis. Upon mycoabcteria infection, macrophages could eliminate the intracellular bacteria through different cell death pathways, including apoptosis and autophagy.

c-Myc is a transcription factor that regulates a variety of target genes and control different cellular functions such as proliferation and immune resposnse. Recently, our group revealed that c-Myc has a potential role in regulating the antimicrobial responses in macrophages.

Here we use BCG, a live attenuated strain of Mycobacterium bovis, which is similar to Mtb in antigenic composition, as a model to study the role of c-Myc in regulating mycobacteria-induced autophagy. We first investigated the role of c-Myc in BCG-induced LC3BII levels. Knocking down c-Myc by siRNA could decrease BCG-induced LC3BII levels. We found that BCG-induced autophagy is dependent on JNK and p38 and independent on PI3K or ERK pathways. And knocking down of c-Myc could significantly inhibit phosphorylation of p38. In conclusion, c-Myc may play a positive role in mycobacteria-induced autophagy in human macrophages.

Right Ventricular Mechanics in Adolescents and Young Adults Long-term After Repair of Coarctation of the Aorta

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Background: Alteration of right ventricular (RV) function has been found in patients with pressure-loaded left ventricles due to systemic hypertension and aortic stenosis. We tested the hypothesis that RV function may be altered in adolescents and adults with repaired coarctation of the aorta (CoA) and related to left ventricular (LV) mass.

Methods: Twenty-eight (15 males) patients with CoA, aged 23.7±6.5 years, at 20.6±5.4 years after surgical or catheter interventions and 28 (14 males) aged matched healthy controls were studied. Patients with significant residual CoA were excluded. M-mode, tissue Doppler imaging, and speckle tracking echocardiography were performed to assess LV mass and shortening fraction, anterior RV wall thickness, and RV myocardial tissue velocities and deformation.

Results: Systolic (p=0.14) and diastolic (p=0.32) blood pressure was similar between patients and controls. Compared with controls, patients had significantly greater LV shortening fraction (p=0.028), indexed LV mass (p=0.016), and indexed RV anterior wall thickness (p=0.012). With regard to RV function, patients had significantly lower tricuspid annular systolic (p<0.001) and early diastolic (p<0.001) velocities, isovolumic acceleration (p=0.004), global RV systolic longitudinal strain (p=0.03), systolic strain rate (p=0.012), and early (p=0.021) and late (p=0.012) diastolic strain rates than controls. Patients with an associated ventricular septal defect (n=6) requiring closure compared to those without had even lower tricuspid annular systolic (p=0.01) and early diastolic (p=0.041) velocities. For the whole cohort, LV mass correlated negatively with RV systolic strain rate (r=-0.27, p=0.045) and tricuspid annular early diastolic velocity (r=-0.40, p=0.002), while RV anterior wall thickness correlated negatively with tricuspid annular systolic (r=-0.42, p=0.002) and late diastolic (r=-0.40, p=0.003) velocities, and positively with e/a ratio (r=0.31, p=0.024).

Conclusion: RV systolic and diastolic function is impaired in patients late after repair of CoA and related to increased LV mass and RV thickness, even in the absence of residual CoA and systemic hypertension.

Investigating the Role of Interleukin-17A on Cytokines Production by Macrophages in Response to Bacterial Infections

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Interleukin-17A (IL-17A) has been shown to associate with a variety of infection diseases. In this study, we investigate whether IL-17A affects cytokines production of human peripheral blood-derived macrophages during *Mycobacteriun bovis* BCG or *Klebsiella pneumoniae* infection. We observed that IL-17A-treated macrophages exhibited suppressed productions of TNF-α and IL-6 in