Insulin Resistance and Cardiac Remodeling in Patients with Ischemic Stroke: An Insulin Resistance Intervention after Stroke (IRIS) Trial Substudy.

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Background and Purpose: Left ventricular hypertrophy (LVH) is a well-known marker of cardiovascular risk. Insulin resistance alters myocardial energy metabolism, promotes hypertension and atherosclerosis and might predispose to the development of LVH. The extent to which insulin-resistance is associated with LVH in patients with cardiovascular disease is uncertain. The Insulin Resistance Intervention after Stroke (IRIS) Trial is a Yale-directed NIH-sponsored multi-center trial, testing whether treatment targeted at ameliorating insulin resistance in non-diabetic patients after ischemic stroke prevents myocardial infarction and recurrent stroke. The purpose of this analysis was to determine whether the degree of insulin resistance of subjects in the trial was associated with the presence of LVH.

Study Design: Retrospective analysis of electrocardiograms (ECG) of 298 patients enrolled in the IRIS study. The ECGs were performed prior to study enrollment after ischemic stroke. LVH was determined according to the Cornell, Sokolov-Lyons and aVL criteria. The presence of left atrial abnormality, left bundle branch block or Q waves in the anterior, inferior and lateral leads was analyzed. Insulin resistance was assessed using the Homeostasis Model Assessment (HOMA) score, calculated from fasting plasma insulin and glucose concentrations. In order to qualify for the study, all patients were non-diabetic and had insulin resistance defined as a HOMA > 3.0.

Results: Of 298 insulin-resistant patients after ischemic stroke, 67 (22.48%) had LVH based on at least one of the three criteria. Twenty four ECGs were excluded due to a paced rhythm or a poor quality baseline ECG. Thirty four (11.4%) met the Cornell criteria, 20 (6.7%) met the Sokolov-Lyons criteria and 39 (13%) met the aVL criteria. The mean age of the patients was 63 years for both those with or without LVH. The mean HOMA score was 4.73 in patients with LVH and 5.2 in those without LVH (pNS). LVH was more prevalent in female and African-American (AA) patients.

Conclusion: Patients with LVH do not appear to have a greater degree of insulin resistance based on HOMA score. LVH is more common in women and AA subjects who have had ischemic stroke.