

The MDA Oxidative Stress in ALS Study Newsletter

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INTRODUCTION

Mary Kilty, MBA, MPH

In our first newsletter, we described the overall process of oxidative stress caused by environmental factors. To remind you of this, we have included a picture below showing the effect of oxidative stress on a human cell. In this issue, we highlight psychological stress and its relationship to oxidative stress and to ALS. On the reverse side of the newsletter, we profile four of our Columbia collaborators and the current enrollment status of the study. Since the first newsletter, we have had several first and second follow up visits with our subjects. All patients who were scheduled for follow up visits completed the interviews and gave the necessary biological samples. We are so pleased with this level of follow up and greatly appreciate your efforts to stay involved with the study.

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PSYCHOLOGICAL STRESS, ALS, AND OXIDATIVE STRESS

Judith Rabkin, PhD, MPH

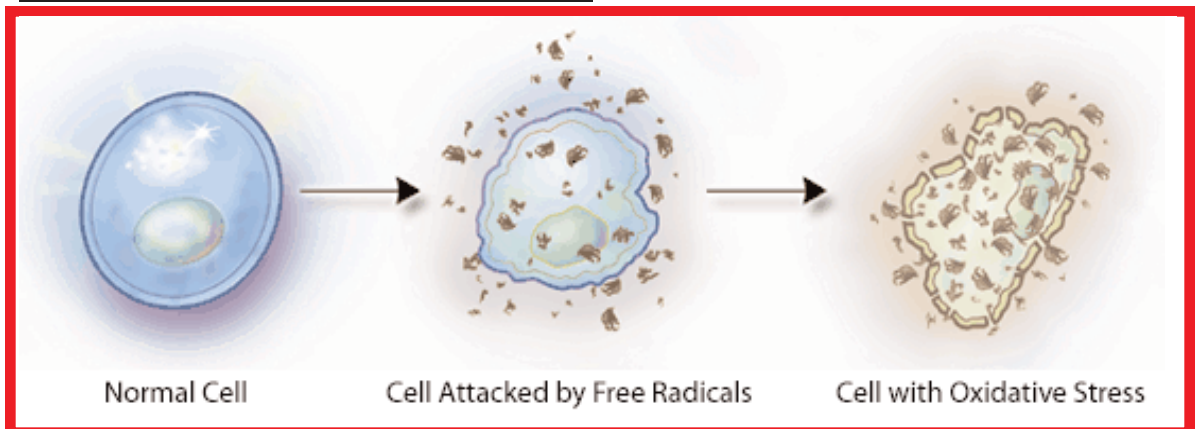
One of the questions that this study is designed to consider is the effect of stressful life experiences on ALS survival and quality of life and whether or not this is related to oxidative stress, a physiological process described in our last newsletter. Information is gathered from the psychological questionnaires that are administered towards the end of the interview. Everyone has stress in their lives, and having a difficult disease certainly increases the probability of feeling pressured, upset, sad, depressed, fearful, angry, and other strong emotions.

These emotions are universal, but for some people they are more intense and pro-

tracted than others. What are their effects on illness progression? The research on the relationship between ALS disease progression and stressful life experiences is sparse. One study followed ALS patients for three years and found that poor psychological status was associated with shorter survival. Another small study found that positive mood was associated with increased survival. However, a few small studies provide limited evidence of a link between ALS survival and psychological state and these links might be explained by other factors.

We will evaluate this question with consideration of physiological processes that may underlie disease progression, namely oxidative stress. To do this we will look at the association of oxidative stress levels with psychological state and ALS progression and survival. This will be done by measuring certain substances in the blood and urine that are markers, or 'fingerprints', of oxidative stress and by examining questionnaire data that may indicate environmental exposures to oxidative stress. Our study is designed to provide detailed information for evaluating whether the ALS and psychological stress link exists. If it does, then the information obtained could help to devise various strategies for disease management such as relieving stress or by recommending antioxidant treatment to patients.

An equally important question is whether we can identify buffers that protect against the effects of psychological stress. What coping strategies help to maintain optimism and hope in the face of illness? For example, maintaining the ability to experience positive emotions, even in the presence of grief, has been found to attenuate the impact of distress or depression and to preserve quality of life. Some of the questions we ask in these interviews are addressing these issues.





The Eleanor and Lou Gehrig MDA/ALS Research Center

SOME OF OUR COLLABORATORS:



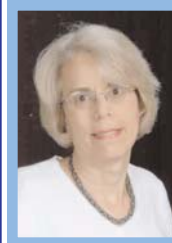
Dr. Jeri Nieves is also an Associate Professor of Clinical Epidemiology at the Mailman School of Public Health at Columbia University. Dr. Nieves has co-authored over 60 journal articles, reviews, and book chapters on nutrition, epidemiology, and osteoporosis. She is a graduate of Columbia University where she received her Ph.D. in Epidemiology, following a Masters Degree in Nutrition from Cornell University. She has an interest in the nutritional causes of disease including osteoporosis, Alzheimer's disease and physical function in the elderly. She serves on the Editorial Board of Osteoporosis International and is the Principal Investigator for the New York State Osteoporosis Prevention and Education Program.



Dr. Ali Naini is a Senior Research Scientist and Director of Laboratory of Molecular Neurogenetics in the Department of Neurology and a member of Houston Merritt Center for Clinical Research. Dr. Naini's research interests include molecular pathogenesis of neurodegenerative diseases and primary CoQ deficiency. In collaboration with Drs. Hiroshi Mitsumoto, Michio Hirano, and Serge Przedborski, Dr. Naini studies patients affected with amyotrophic lateral sclerosis (Lou Gehrig's Disease) harboring mutations in their Cu/Zn superoxide dismutase gene. In collaboration with Drs. Savatore DiMauro, and Michio Hirano, he also studies patients with mitochondrial encephalomyopathy due to primary CoQ deficiency. Dr. Naini is board certified clinical biochemist and molecular geneticist. He received his graduate training at London University and University of Surrey in the United Kingdom. Dr. Naini joined the Neuromuscular group at Houston Merritt Center in 1997 as the director of the Laboratory of Molecular Neurogenetics and Mitochondrial Diseases. Dr. Naini is a regular reviewer of several international journals and is author and co-author of numerous publications related to the pathogenesis and molecular aspects of neurological diseases.



Dr. Judith Rabkin is a psychologist engaged in research on stress and coping, depression, and positive mood in relation to serious illness. In the MDA Oxidative Stress Study, her role is to select and evaluate questions and scales that measure such characteristics and how they relate to illness progression. She has a Ph.D. in Clinical Psychology from NYU and a MPH from Columbia University School of Public Health.



Dr. Regina M. Santella is Professor of Environmental Health Sciences at the Mailman School of Public Health at Columbia University, and Director of the NIEHS (National Institute of Environmental Health Sciences) Center for Environmental Health in Northern Manhattan, of the Cancer Epidemiology Program and the Biomarkers Shared Resource of the Herbert Irving Comprehensive Cancer Center. She received a PhD in Biochemistry from the City University of New York. Dr. Santella's research involves the development of laboratory methods for the detection of human exposure to environmental and occupational carcinogens and their use in molecular epidemiology studies to identify causative factors, susceptible populations, and preventive interventions.

PROGRESS TO DATE:

We are still making marvelous progress on enrolling patients and gathering biological samples and interview data from all of you!

Some statistics of interest as of November 17, 2008:

Target Enrollment: 100 patients over 2 years

Enrollment Start: mid-March, 2008

#Patients Enrolled to Date: 29

#Patients Completed Baseline Measures: 29

#Patients Completed three month follow up: 15

#Patients Completed six month follow up: 6