AMERICAN PSYCHIATRIC ASSOCIATION
ANNUAL MEETING 2014

RATE OF PATIENT READMISSION FOLLOWING PSYCHIATRIC HOSPITALIZATION FOR MAJOR DEPRESSIVE DISORDER CORRELATED WITH INNATE CYP2D6 FUNCTION

Authors: Gualberto Ruaño, M.D., Ph.D., Richard L. Seip, Ph.D., Bonnie Szarek, R.N., Harold I. Schwartz, M.D., John W. Goethe, M.D.

Objective: Well-characterized sequence alterations in the *CYP2D6* gene occur with significant frequency in psychiatric populations. Many psychotropic medications are known substrates for metabolism by the CYP2D6 isoenzyme encoded by the *CYP2D6* gene. Priorly, we had shown that length of psychiatric hospitalization was longer, dyslipidemic side effects more pronounced, and psychotropic utilization more intricate in patients with sub-functional CYP2D6 status (APA annual meetings 2010, 2011, 2013). We hypothesized that innate CYP2D6 functional status was also related to hospital re-admission following psychiatric hospitalization for major depressive disorder (MDD).

Methods: We examined a cohort of 149 psychiatric patients with MDD admitted for hospitalization and subsequently discharged from the Hartford Hospital Institute of Living with ICD9 codes 296.20, 296.22, 296.23, 296.24, 296.25, 296.30, 296.31, 296.32, 296.33, 296.34. After the hospitalization, patients were followed for hospital readmission 30 days post discharge. CYP2D6 functional status was determined in each patient by genotyping 19 *CYP2D6* alleles and quantified according to the *Metabolic Reserve* **(MR)** *Index*. MR is based on the combinatorial genotypes of null, deficient, functional, and rapid alleles for each patient, ranging for CYP2D6 from a low of 0 (2 null alleles) to a high of 3.0 (gene duplication or 2 rapid alleles). We grouped patients into categories of *Sub-functional* (CYP2D6 MR ≤ 1.5, N = 66 patients, 44%), *Functional* (CYP2D6 MR of 2.0 to 2.5, N = 70, 47%), or *Supra-functional* (CYP2D6 MR Index = 3.0, N = 13, 9%) metabolizer status and tested for differences in psychiatric hospital readmission 30 days after discharge across these 3 categories using the chi square test.

Results: The number of patients re-admitted 30 days after discharge was 8, for a readmission rate of 5.4% (8/149). If proportional to the cohort, the sub-functional, functional, and supra-functional categories would have had 3.5, 3.8, and 0.7 patients. Instead, the categories had 4, 2, and 2 patients, respectively. The readmission rate was 5.9% (4/66) for patients with sub-functional metabolizer status, 2.9% (2/70) for patients with Functional metabolizer status, and 15.4% (2/13) for patients with supra-functional metabolizer status (trend for difference between groups, $p<0.17$). Those readmitted within 30 days had a significantly higher rate of hospitalization within the past year (7/8, 88% *vs.* 69/140, 49%, $p<0.036$) and trended to prescription of a greater number of antidepressants (3.1 ± 1.5 *vs.* 2.2 ± 1.9, $p<0.09$).

Conclusion: Innate CYP2D6 functional status, among other factors, may affect 30 day readmission rate after psychiatric hospitalization in MDD patients. Research to investigate this possibility in a larger cohort is ongoing at our center and will be described. Pharmacogenetics is not only a tool for improved psychiatric patient care, but also for optimization of resource utilization in hospitals.

Educational Objectives: At the conclusion of this presentation, participants will be able to *(1)* describe the prevalence and significance of CYP2D6 drug metabolism deficiencies, *(2)* assess the utility of CYP2D6 Metabolic Reserve in characterizing and individual's metabolic phenotype and *(3)* utilize CYP2D6 MR to improve psychotropic management.

Disclosures: Dr. Ruaño is President of Genomas Inc. Dr. Goethe, Dr. Seip, Dr. Schwartz, and Ms. Szarek have no disclosures.