Genetics And Drug Response: Study On The Influence Of Genetics In Variation To Morphine Response.

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Background
Morphine is an opioid analgesic drug and regarded as the gold standard, or benchmark, of analgesics used to relieve intense pain and suffering. However, the role of genetics in individual variations in response to morphine use clinically is not clearly understood.

Objective
The objective of this study is to determine the role of genetics in individual variations in response to prescription morphine use.

Subjects
144 pain patients taking only morphine from five research sites in the US. Subjects taking other prescription opioids were excluded from the study. Subjects were divided into 2 groups on the MEDSscale (a scale of 0-5 to determine medication efficacy): poor responders (n=52) had a score of 0 to 3 while good responders (n=62) had scores 4 to 5.

Methods
Subjects were genotyped using Taqman® SNP Genotyping Assays (Life Technologies, Carlsbad, CA). It consists of a panel of 12 single nucleotide polymorphisms (SNPs) in genes encoding for proteins expressed in the mesolimbic reward pathway.

Results
Chi² test using IBM SPSS V21 found only OPRM1 (Rs1799971) to have significant association with response to prescription morphine use.

OPRM1: Dominant Model (A/A vs. A/G-G/G) p=0.019, Two sided Fishers exact =0.030.

Logistic regression found A/G-G/G variations to be more associated with good response to morphine while A/A genotype was found to be associated with poor response. p= 0.024. OR 3.47. 95% CI (1.18 -10.2).

Conclusion
This study showed that OPRM1 (Rs1799971) may play a role in the individual variations in response to prescription morphine. Findings in this study could help illuminate the role of genetics in varied individual therapeutic response to morphine use.