CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
Sara M. Yusufaly

Project Number
S1419

Project Title
The Effects of Diabetes Mellitus on Sensory Nerve Conduction

Abstract

Objectives/Goals
The objective of this study was to determine the effects of diabetes mellitus (abnormal glucose tolerance) on median and ulnar sensory nerve conduction velocity, latency and amplitude of sensory response. My hypothesis stated that having diabetes mellitus would decrease nerve conduction velocity, increase latency, and decrease amplitude.

Methods/Materials
The hand-held stimulator of the electromyography machine was used to determine the subjects latency and amplitude when the wrist of each subject was in the neutral position. By dividing the latency by .08 meters (or 8 centimeters), a mathematical procedure, the nerve#s velocity was determined. This investigation tested a ratio of 1:1 diabetics to non-diabetics.

Results
Although the data gathered throughout this investigation illustrated a variety of ideas, my hypothesis was, in the majority of instances, supported. The nerve conduction velocity of non-diabetic subjects was faster than that of diabetics; the latency of sensory response within non-diabetic subjects was also higher. The data gathered from the amplitude of sensory response also supported my hypothesis, as diabetics had a lower amplitude of sensory response than non-diabetics.

Conclusions/Discussion
My hypothesis stated that the nerve conduction velocity and amplitude of sensory response would be lower in subjects who had diabetes mellitus. It also stated that the latency of sensory response would be higher in non-diabetics. The data gathered supports latency, velocity and amplitude related hypotheses.

Summary Statement
This experiment was an investigation of the effects of abnormal glucose tolerance (diabetes mellitus) on median and ulnar nerve conduction velocity, latency of sensory response, and amplitude of sensory response.

Help Received
Neurologist monitored the use of the electromyography machine; Parents and brother provided guidance, additionally helping construct the board; Subjects agreed to be tested;