Stress, Injury, and Healing

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Introduction: Patient-centered medical care for chronic diseases increasingly requires physician support for self-management, such as blood glucose monitoring in diabetes. For patients with diseases caused or aggravated by excessive sympathetic nervous system activity, such as anxiety, hypertension, and benign arrhythmias, the current options are cognitive behavioral therapy, medication, or self-regulation. In this exploratory study, I employed personalized one-on-one patient education on the effects of stress on a medical diagnosis and an exercise designed to reduce sympathetic tone. Heart rate variability (HRV) was chosen as an outcome measure based on medical evidence¹ that the lowest HRV tertile is associated with a 2.5 greater risk of early all-cause mortality and a six times greater risk of cardiac death.² Self-measured results and trends were discussed during a routine office visit.

Method: A series of 42 patients with whom I share a doctor-patient relationship gave informed consent to receive additional coaching in the physiology of their illness and were taught a deep inspiratory maneuver, visual imagery, and how to use a device that displays heart rate variability (EMwave PSR, manufactured by Quantum Intech Inc). Office sessions were displayed in a PC version of HeartMath software. The patients were pre-screened, and those with significant arrhythmias, pacemaker dependence, psychosis, active mania, and severe personality disorders were excluded. They were informed that the use of biofeedback in this setting is not medically validated for diagnosis nor approved for treatment. Patients were not charged for the use of the technology or my time. All patients were encouraged to continue current medications, diet, and exercise. All were asked to report any symptoms to my office and not to use the device for any acute condition. A detailed statistical analysis was not performed.

Results: Of the 42 patients, 36 had an improvement in HRV amplitude and/or reduction in the very low frequency spectrum, consistent with decreased sympathetic autonomic activity. Most patients reported an increased “feeling of control”; three patients were nervous about the meaning of the waveforms and returned the device. Nine of 18 patients taking benzodiazepine medications were successfully weaned during the study period. There were no complications attributed to this intervention. Eleven of the patients have continued using this technique on their own.

Conclusion: This exploratory study used HRV as a biofeedback tool for patients with autonomic sensitive disease states. It appears to be safe in the type of patients studied. This was not a controlled study and is no doubt heavily influenced by the fact that the author spent additional time and effort with this cohort. In addition, a strong patient-physician relationship is likely necessary due to the patient expectation that medical therapy requires “a pill.” This tool is not validated, but neither is the stethoscope, which has similar risks of use. The use of biofeedback tools including glucometers, blood pressure cuffs, accelerometers, oximetry, and now HRV may be key to empowering patients and motivating them for health behavior change.

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