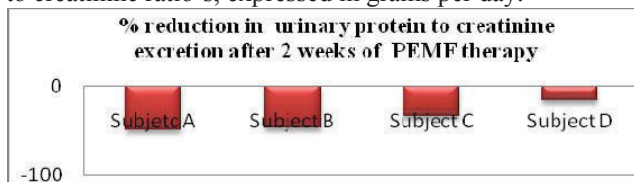


EFFECTS OF PULSED ELECTROMAGNETIC FIELD THERAPY (PEMF) ON REDUCING PROTEINURIA (P) IN CKD

Marc S. Weinberg¹, William E. Weber¹, David A. Weinberg^{2, 1}
Roger Williams Hospital, Boston University School of Medicine,
Providence, RI.² Vanderbilt University, Nashville, TN, Department of
Biomedical Engineering.

Our laboratory demonstrated that the use of supramaximal doses of angiotensin receptor blockers (ARBs) reduced P independent of BP. We investigated the effectiveness of PEMF during a 2 week trial on reducing (P) in subjects with CKD, evaluating for synergy between PEMF and ARBs. PEMF has inherent anti-inflammatory and anti-fibrotic properties that modulate the calcium calmodulin-dependent nitric oxide and cGMP signaling pathways.

Four volunteers with progressive proteinuric nephropathies applied PEMF to their lower-thoracic spine, allowing electromagnetic energy to pulse over both kidneys for 30 min, 3 times a day for 2 weeks. All medications were continued without change, including previously prescribed ARB's. Urinary spot collections were analyzed for protein to creatinine ratio's, expressed in grams per day.



During a two week observational trial the application of PEMF demonstrated reductions in protein to creatinine ratio's expressed on urinary spot collections. Students paired t- test demonstrated in the four subjects, $p = 0.06$. There were no significant changes in the glomerular filtration rate (MDRD) or mean arterial pressures. No adverse events were reported. The reduction in proteinuria over 2 weeks was arithmetically, but not statistically significant due to small population size. This reduction in proteinuria warrants further study to determine long term effectiveness and possible synergy with RAS blockade.