Geriatrics Journal Club

An Inverse Association of Cardiovascular Risk and Frontal Glucose Metabolism


Background: There is increasing evidence for “mixed” dementias, classically thought of as a combination of Alzheimer’s disease (AD) and cerebrovascular disease (CVD), providing the clinical picture of “progressive, multi-infarct.” Vascular risk factors, such as diabetes and obesity, have been shown in large epidemiological studies to be a risk factor for both AD and CVD.

Aim/Hypothesis: These authors asked whether vascular risk factors are associated with cortical hypometabolism in older adults, as measured by resting FDG-PET. They hypothesized that higher vascular risk factor scores would be associated with lower metabolic activity in the frontal lobe (given its particular vulnerability to vascular lesions).

Methods: Fifty-eight (40 men and 18 women) adults (23 non-demented (CDR of 0 and mean MMSE of 29.6), 19 CIND (CDR of 0.5 and mean MMSE of 26.4), and 16 moderate dementia (CDR of 1 and mean MMSE of 18.9)) over the age of 55 years (means in the mid-70s) with above average education underwent PET, 1.5T sMRI, and neuropsych. testing. Those recruited had a tendency toward lacunar infarcts. Exclusionary was cortical stroke or other neurological illness aside from AD or CVD, MMSE below 15, and use of psychoactive drugs (other than cholinesterase inhibitors or SSRIs). Risk of coronary heart disease was obtained by administering the Framingham Cardiovascular Risk Profile (FCRP), which gives you a weighted sum of risk factors (smoking, diabetes, hypertension, cholesterol, and age), and data is obtained via chart review.

Results: Analyses were conducted with multiple regression, and age and clinical status (normal, CIND, dementia) were used as co-variates, and their hypothesis was supported. There were no significant differences in FCRP score between the three groups. Four major brain regions, mainly left hemisphere, showed significant correlations with FCRP score (AFTER controlling for clinical status and age): left frontal inferior operculum, left frontal midorbital, left superior frontal, and bilateral frontal superior medial. They also looked at each FCRP factor separately, and all had significant relation to brain areas (c/w literature on these topics), with the exception of systolic blood pressure; of note, total cholesterol revealed very similar frontal findings as the total FCRP score (but analyses revealed that cholesterol was not carrying this effect alone).

Discussion: The authors opine that a potential mechanism to explain their findings is FCRP predicts vascular brain lesions (e.g., lacunar infarcts) which lead to metabolic changes. Another possibility is that vascular-based cortical dysfunction (e.g., neuronal dysfunction) is driving the metabolic changes.
The Effect of Major and Minor Depression on Medicare Home Healthcare Services Use


Significance: This study is significant because it disagrees with several other studies that have found that patients with major or minor depression have increased Medicare spending on home health services. Depression in later-life has been associated with decreased quality of life and increased mortality. Study claims “Home healthcare provides demonstrated benefits to depressed elderly patients, including better quality of life, as well as preventing or minimizing negative effects of depression on cardiovascular disease and other comorbidities,” but it does not quote where this information came from. A growing amount of research has found that depression is often associated with greater healthcare utilization and costs.

Design: This is an observational prospective study. It is important to note that the data used for this study was gathered when the Interim Payment System (IPS) was used for Medicare. The current system is the Prospective Payment System (PPS) and it is possible that because of the system costs may be different. The four hypotheses used in the study were as follows:

1.) The Medicare home healthcare patients with major depression would have significantly greater use of each of the above services than would patients with neither major or minor depression.
2.) The patients with minor depression would have significantly higher use of each of these services than would patients with neither major nor minor depression.
3.) The effects of major on use would be similar to those of minor depression.
4.) Depressed patients would have greater use for the initial 60 day home care episode and for 1 year after a new home care admission.

Participants: Five hundred thirty-nine new Medicare admissions aged 65 and older. Approximately 13.5% were diagnosed with major depression and another 10.8% with minor depression. Data was collected from patient interviews, informant interviews and certified home health agency medical records. Sample was collected between December 1997 and December 1999. A random sample of new Medicare admissions to the Visiting Nurse Service of Westchester County who were aged 65 and older, able to give informed consent, and able to speak English or Spanish were recruited into the study. After those who were considered ineligible were excluded and consent was asked, a total of 539 people entered the study.

Measurements: “Best estimate” DSM-IV diagnoses for major and minor depression assessed using structured clinical interviews plus medical charts. A team of a geriatric psychiatrist, geriatrician, clinical psychologist, and psychiatric epidemiologist used these interviews plus medical charts to generate a consensus diagnoses for depression. The four categories of home healthcare services used were skilled nurse, home health aide, therapist, and medical social services. The models controlled for sociodemographic status, health status, number of activities of daily living, and
instrumental activities of daily living, mobility disability, cognitive functioning, and pain intensity. There was complete data for 94.6% of cases. Logistic regression analysis was employed to examine probability of home health aide, therapist, and medical social services use in the year after admission. Linear regression analysis and two-part models were used to investigate the number of nurse, aide, therapist, and social services visits during the subsequent year. Standardized predicted mean probability of the above were calculated for major, minor, and no depression. Kaplan-Meier and Cox proportional hazards models were estimated for length of stay in Medicare home care.

**Results:** Major and minor depression appear to have little association with the probability and amount of use of the types of Medicare home health care. Patients with minor depression have similar utilization to that of patients with major depression. The majority of the subjects were female and white. A total of 24.3% of the subjects had major or minor depression. There was a wide range of visits with the mean number being 32.4 visits with an SD of 38.4 visits. The unadjusted utilization data showed no statistically significant differences according to depression status. There were however three significant effects, including patients with major or minor depression were more likely than those with no depression to have received at least one home health aide visit and at least one medical social services visit and had a higher mean number of medical social services visits. With the adjusted data, there were not significant differences at $P < 0.5$ with one difference. Patients with at least one medical social services visit, major depression was associated with more of these visits at $P = 0.6$. Medicare home healthcare length of stay was shortest for patients with no depression, intermediate for those with major depression, and the longest for persons with minor depression. When race was factored out in the Kaplan-Meier and Cox models were used there was not statistical significance between those with major/minor depression and those with no depression.

**Limitations:** The data was collected a long time ago and when the pay system for Medicare was different. Medicare’s home healthcare program is not designed to provide long-term home care so the cost and utilization may be different if we looked at long term costs. These patients also have less influence on when and what services they receive than patients receiving outpatient services. The measures of physical illness and disability are relatively crude. This study only included patients from one home healthcare agency. Too few patients in this study were receiving antidepressant treatment modified the effect of depression on service use. The types of therapy were used in combined form instead of separately.

**Conclusion:** The only hypothesis verified was the one that patient with major depression have similar utilization as those with minor depression. Any potential incremental depression effect on utilization is being offset by the transitional medical state of the patients that entered Medicare home healthcare directly from a hospital, nursing home or rehabilitation facility, and the overall severity of disability and chronic illness present in long-term home healthcare patients. Further research is required to determine whether similar findings occur in other home healthcare agencies and whether these are present under the current Medicare Prospective Payment System reimbursement mechanism.

**Clinical Practice:** This study disagrees with others that say the depression increases healthcare utilization, a fact that has been taken for granted. Now we must look more closely and not assume taking care of a client with depression will be more costly. Overall, this reminds us that no matter the patient we must do our best to balance quality of care with cost efficiency.
Effects of an oral ghrelin mimetic on body composition and clinical outcomes in healthy older adults


Purpose: The purpose of this study was to determine whether MK-677, an oral ghrelin mimetic increases growth hormone secretion into the young-adult range without serious adverse effects, prevents the decline of fat-free mass, and decreases abdominal visceral fat in health older adults. MK-677 is a drug which acts as a potent, orally active growth hormone secretagogue, mimicking the GH stimulating action of the endogenous hormone ghrelin.

Design: Study design was a randomized, double-blind, controlled trial with modified-crossover, lasting for two years. Healthy men and women were randomized to received either placebo or oral MK-677, 25 mg. After one year, the participants receiving MK-677 were then randomly assigned group 1 (to continue MK-677 or change to placebo) or group 2 (those receiving MK-677 were changed to placebo). Inclusion criteria was 60 years of age and being healthy. Exclusion criteria were body mass index greater than 35 kg/m², completing strenuous exercise for more than 60 minutes per day, smoking, diabetes, history of cancer, untreated hypertension or thyroid disease, or medication known to affect growth hormone secretion. Measurements were conducted at baseline and every six months at the General Clinical Research Center. Merck Research Laboratories provided the placebo and medication.

Outcome Measures: Serum growth hormone and IGF-1 levels were measured at the center’s laboratory. Fat free mass, total body fat, body weight, insulin sensitivity, lipid and cortisol levels, limb lean and fat mass, isokinetic strength, function, skeletal muscle mass, bone mineral density, and quality of life were measured.

Results: Participants receiving the daily administration of MK-677 significantly increased growth hormone and insulin-like growth factor 1 levels to those of healthy young adults without serious adverse effects. In the placebo group, fat-free mass decreased and it increased in the MK-677 group. For side effects, 36% of the placebo participants reported an increase in appetite compared to 67% of the participants receiving MK-677. In addition, there were reports of lower-extremity edema and muscle pain. The two-year exploratory analyses confirmed the first year results.

Limitations: Study included both males and females. Study power was insufficient.

Conclusions: The MK-677 did enhance pulsatile growth hormone secretion which increased fat-free mass.