Prior Alcohol Consumption and Mortality Following Acute Myocardial Infarction

Michael L. Moore, MD, FACP


Address: Nationwide Insurance, One Nationwide Plaza, Columbus, OH 43215.

Correspondent: Michael L. Moore, MD, Vice President and Chief Medical Director.

Key words: Alcohol, mortality, myocardial infarction.

Received: May 14, 2001.

Accepted: May 21, 2001.

It has been fairly widely established that the consumption of moderate amounts of alcohol can reduce the incidence of myocardial infarction. Numerous explanations have been postulated as to why this occurs, including beneficial effects on atherogenic lipids as well as decreasing levels of prothrombotic factors, particularly fibrinogen. It has not been studied, however, if the consumption of alcohol following a myocardial infarction is associated with a decrease in mortality.

METHODS

In this study, a total of 1913 patients who had recently been diagnosed as having an acute myocardial infarction were questioned regarding their drinking habits. It was found that 47% abstained from alcohol, 36% consumed less than 7 drinks per week, and 17% consumed 7 or more drinks per week. The group was then followed from 1989 through 1994, the measured end-point being death from any cause.

RESULTS

As with alcohol’s effect on prevention of myocardial infarction, the same effect was demonstrated post-MI. The all-cause mortality rate for abstainers was 6.3 deaths per 100 person-years. The all-cause mortality rate for those who consumed less than 7 drinks per week was 3.4 deaths per 100 person-years. Finally, the all-cause mortality for the group of over 7 drinks per week was 2.4 deaths per 100 person-years.

DISCUSSION

Once again, this study demonstrates the beneficial effects on coronary artery disease from moderate alcohol consumption and in fact takes it one step farther with demonstra-
tion that moderate alcohol consumption lowers mortality risk even after MI.

One could infer from this study, in regard to amount of alcohol consumed, that "the more, the better" since overall all-cause mortality was lowest in the heaviest consumption group. This is a bit misleading in that the average consumption in this "7 or more per week" group was only around 15 drinks per week. This matches up well with prior observations that alcohol consumption of up to 2 drinks per day had little detrimental effect on health.

In conclusion, the consumption of moderate amounts of alcohol has been shown in the past to reduce the incidence of myocardial infarction. This study takes it one step farther with demonstration of reduction in all-cause mortality after myocardial infarction. The consumption of over 7 drinks per week was associated with the lowest rate of mortality of the 3 groups studied.
LITERATURE REVIEW

Prevention of Type 2 Diabetes Mellitus

John Kirkpatrick, MA, MD


Address: Aid Association for Lutherans, 4321 North Ballard Road, Appleton, WI 54919-0001.

Correspondent: John E. Kirkpatrick, MD, 2nd Vice President and Associate Medical Director.

Key words: Diabetes mellitus, prevention, weight loss, exercise.

Received: May 14, 2001.

Accepted: May 21, 2001.

Diabetes mellitus is a significant burden in the United States no matter what measure of morbidity or mortality is used. It is estimated that approximately one half of all type 2 diabetics in this country are undiagnosed at this time. The incidence of type 2 diabetes is increasing not only in this country but also worldwide. This is in part due to the alarming rise in the incidence of obesity and sedentary lifestyle. Those with impaired glucose tolerance have an annual incidence of being diagnosed with diabetes mellitus at up to 10% per year. There is no doubt about the genetic predisposition of diabetes. However, there is also strong evidence that environmental factors such as obesity and a sedentary lifestyle play an important role in developing this disease.

This study was set up to evaluate those with impaired glucose tolerance. The Finnish Diabetes Prevention Study was conducted to evaluated whether changes in lifestyle may prevent or delay the onset of type 2 diabetes in those subjects with impaired glucose tolerance.

THE STUDY

The Finnish Diabetes Prevention Study was designed to evaluate the impact of interventions on the incidence of type 2 diabetes among high-risk groups. The study enrolled 523 overweight subjects with impaired glucose tolerance. They were randomized to a control group and an intervention group. The intervention group had regular visits with physicians, nutritionists, and for exercise training. The control group did receive some general information on lifestyle changes alone. Goals for changes were measured in 5 categories: reduction in weight (>5%), reduction in fat intake (<30% of total intake), reduction in saturated fat (<10% total intake), increase in fiber (>15 g/d), and increase in exercise (>30 min/d).

Subjects were evaluated in those 5 categories as well as using the end point of devel-
oping type 2 diabetes mellitus. Patients were followed for up to 6 years unless they met the end point of the diagnosis of type 2 diabetes mellitus. The mean period of follow up was 3.2 years. Baseline characteristics were similar in both groups. This included sex, age, body mass index, waist size, hip size, plasma glucose, serum insulin, serum lipids, and ambulatory blood pressure.

RESULTS

Weight reduction of >5% was achieved by 43% of the intervention group, compared with 13% of the controls. The average amount of weight loss was 4.2 kg. The highest success rate of the categories measured was in exercising. In the intervention group, there were 86% that met the self-reported criteria of exercising more than 30 minutes each day. The control group had a rate of 71%. The lowest success rate was in the fiber goal. Only 25% of the intervention group and 12% of the control group achieved the measure of >15 g of fiber/d. The variables of waist circumference, oral glucose challenge after plasma glucose concentration fasting and after a 2-hour oral glucose challenge, and serum insulin levels were significantly lowered among the intervention group. The decrease in weight was maintained throughout the end of the study.

Diabetes was diagnosed in a total of 86 subjects, with 27 in the intervention group and 59 in the control group. The absolute incidence of diabetes was 32 cases/1000 person-years in the intervention group. This rate was 78 cases/1000 person-years in the control group. The incidence of developing diabetes between the 2 groups became statistically significant at 2 years, 6% versus 14%. The difference remained significant through year 6, the end of the study. The cumulative incidence of diabetes was 58% lower in the intervention group. There was a 64% decrease among men in the intervention group and a 54% decrease among women.

The subjects were ranked according to the success in achieving the goals of the intervention. There was a strong inverse correlation between the success score and the incidence of diabetes. In the subjects that did not achieve any of the goals, diabetes developed in 38% of those in the intervention group and 31% in the control group. Diabetes did not develop in any subject who achieved the goal in 4 of 5 areas.

DISCUSSION

Diabetes may be prevented or at least reduced in incidence for 6 years. Success long term is a presumption and certainly not a given fact at this point. A modest weight loss with minimal exercise may be adequate to alter metabolic future. Whether the remarkable success was due to diet, exercise, or both is not entirely clear. Certainly, pessimism over a sedentary obese person with glucose intolerance is not warranted. The long-term implications for decreasing morbidity and mortality are promising but are not available for at least 10–20 years. There is a study currently going on in the United States. The Diabetes Prevention Program is a randomized, multi-center study of 3000 subjects looking at altering the risk of diabetes with diet, exercise, or metformin. Results are expected in 2002.

The future looks bright for the possibility of improving the morbidity and mortality of these high-risk subjects with impaired glucose tolerance if lifestyle modifications can be maintained.
LITERATURE REVIEW

Cardiovascular Morbidity and Mortality Associated with the Metabolic Syndrome

Kristi Petersen, MD


Address: American United Life Insurance, One American Square, Indianapolis, IN 46206.

Correspondent: Kristi Petersen, MD, Vice President-Assistant Medical Director.

Key words: Coronary artery disease, cardiovascular mortality, diabetes mellitus, metabolic syndrome.

Received: May 14, 2001.

Accepted: May 21, 2001.

The observation of a cluster of metabolic abnormalities was made as early as the 1920s. Obesity, microalbuminuria, hypertension, glucose intolerance, high triglycerides, low HCL cholesterol, and abnormalities in fibrinolysis and coagulation have all been associated with what has been called Syndrome X, metabolic syndrome, insulin resistance syndrome, the deadly quartet, or the plurimetabolic syndrome. Insulin resistance syndrome has been widely used and the insulin resistance seemed to be the common denominator of the syndrome. A unifying definition was needed to assess if the cluster of risk factors was associated with an increased risk of cardiovascular disease that was greater than that each represented as an individual CAD risk. The World Health Organization (WHO) proposed a definition in 1998 for what is now called the metabolic syndrome. They felt that insulin resistance had not been established as the cause of all the components of the syndrome. The components of the syndrome are, as defined by the WHO proposal,

- Hypertension (treatment or elevated BP [>160 systolic or >90 diastolic])
- Dyslipidemia (triglycerides ≥1.7 mm/L and/or low HDL <0.9 mmol/L in men or <1.0 mmol/L in women)
- Obesity (body mass index ≥ 30 kg/m² and/or high WHR ratio [>0.90 in men, >0.85 in women])
- Microalbuminuria (urinary albumin excretion rate ≥ 20 μg/min).

Persons with type II diabetes or an impaired fasting glucose/impaired glucose tolerance (IFG/IGT) were considered to have the metabolic syndrome if 2 of the criteria were fulfilled. If a person had a normal glucose tolerance (NGT), they were considered to have the metabolic syndrome if they also
fulfilled 2 of the WHO defining criteria and were insulin resistant. A standardized calculated model based on fasting plasma insulin and fasting plasma glucose defined insulin resistance.

The current study was undertaken to assess the prevalence of cardiovascular morbidity and mortality associated with the WHO-defined metabolic syndrome. The current study group was extracted from the Botnia study initiated in 1990. The initial study looked at identifying early metabolic defects in families with type II diabetes in Sweden and Finland. A total of 4483 study subjects between the ages of 35–70 years were included from the Botnia group for the analysis of cardiovascular risk associated with the metabolic syndrome. A median follow-up at 6.9 years for the 3606 subjects from the original Botnia center was done for total and cardiovascular mortality. Mortality data were obtained from a central death certificate registry.

RESULTS

This article covered the cardiovascular disease risk and mortality in relation to each component of the metabolic syndrome in detail. Overall, some of the most pertinent results are that, in women and men, respectively, the metabolic syndrome was seen in 10 and 15% of those with NGT, 42 and 64% of those with IFG/IGT, and 78 and 84% in subjects with type 2 diabetes. There was a three-fold increase in risk for coronary heart disease and stroke in the subjects with the metabolic syndrome ($P < .001$) compared with those without the syndrome for each category of glucose tolerance. Cardiovascular mortality in those with the syndrome conferred a $RR$ of (95% CI) of 1.81. When individual components were considered, the strongest risk for cardiovascular mortality was conferred by microalbuminuria ($RR$ 2.80, $P < .001$).

DISCUSSION

The importance of the metabolic syndrome is related to its impact on cardiovascular mortality and morbidity. The CHD risk associated with the cluster of factors defined as the metabolic syndrome was synergistic, significantly greater than the risk of each individual component of the syndrome. The inclusion of microalbuminuria as part of the syndrome may be questioned, yet it has been a strong predictor of cardiovascular mortality and morbidity in the past. In this study, microalbumin was associated with a marked increase in cardiovascular death. It may represent a surrogate measure of endothelial dysfunction.

With the information outlined in this study, a close look at applicants who have a normal fasting glucose but have the other aspects of the metabolic syndrome is prudent. Although we would have no way of knowing if an applicant who had normal fasting glucose was insulin resistant, if they have laboratory and physical measurements indicating the components of the metabolic syndrome, underwriting caution may be in order.
LITERATURE REVIEW

Survival After Onset of Dementia

Wayne Heidenreich, MD


Address: Northwestern Mutual, 720 E. Wisconsin, E14B, Milwaukee, WI 53202-4797.

Correspondent: Wayne Heidenreich, MD, Medical Director.

Key words: Alzheimer’s, dementia, survival.

Received: May 18, 2001.

Accepted: May 21, 2001.

In the next 50 years, the percentage of Americans older than 75 years of age will increase from approximately 6% to over 10% of the population. With this aging, the prevalence of Alzheimer’s will impact nearly 1 in every 50 Americans. Information that defines the probable survival after the onset of this disease is important for patients, families, health providers, and those determining the impact on public and private payment for long-term care services.

Length bias results from individuals with rapid disease progress not surviving long enough to enter a study. This study estimated the survival of a cohort from the onset of symptoms of dementia. This helped to adjust for length bias while following up over 5 years.

STUDY METHODOLOGY

The Canadian Study of Health and Aging is an epidemiologic study of elderly people in Canada. Data on survival were available for 1132 subjects identified with dementia in a sample of 10,263.

Dementia was diagnosed according to criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edition, revised (DSM-III-R) and the *International Classification of Diseases*, 10th edition (ICD-10). Clinical exams were done at entry for all subjects by a nurse administering the Modified Mini-Mental State Examination, a physician performing a physical and neurological examination, and a neuropsychologist conducting neuropsychological tests. This evaluation took place in 1991–92.

All surviving patients were again clinically assessed 5 years later in 1996–97. The families of patients who had died were interviewed to establish date and cause of death.

The onset of symptoms was determined by responses of family members to a series of questions regarding memory problems and change of functional behavior.

Three subgroups were identified: possible Alzheimer’s, probable Alzheimer’s, and vascular dementia.
RESULTS

The prevalence of dementia was 8% (1132/10,263). The characteristics of the subjects include the following:

<table>
<thead>
<tr>
<th>Female</th>
<th>70.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at first evaluation</td>
<td>$83.8 \pm 3.78$ years</td>
</tr>
<tr>
<td>Diagnosis</td>
<td></td>
</tr>
<tr>
<td>Probable Alzheimer's</td>
<td>48.2%</td>
</tr>
<tr>
<td>Possible Alzheimer's</td>
<td>30.7%</td>
</tr>
<tr>
<td>Vascular dementia</td>
<td>21.1%</td>
</tr>
<tr>
<td>Severity of dementia</td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>18.8%</td>
</tr>
<tr>
<td>Moderate</td>
<td>39.3%</td>
</tr>
<tr>
<td>Severe</td>
<td>41.9%</td>
</tr>
</tbody>
</table>

One hundred thirty-four subjects with dementia were excluded because the age of onset of symptoms could not be determined. These excluded subjects were similar to the study group except that 38.7% of them had milder dementia.

<table>
<thead>
<tr>
<th>Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>All subjects</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Diagnosis</td>
</tr>
<tr>
<td>Probable Alzheimer's</td>
</tr>
<tr>
<td>Possible Alzheimer's</td>
</tr>
<tr>
<td>Vascular dementia</td>
</tr>
<tr>
<td>Age at onset of dementia (years)</td>
</tr>
<tr>
<td>&lt;65</td>
</tr>
<tr>
<td>65–74</td>
</tr>
<tr>
<td>75–84</td>
</tr>
<tr>
<td>≥85</td>
</tr>
</tbody>
</table>

DISCUSSION

The reported median survival with dementia ranges from 5 to 9 years. This study reports a surprisingly short survival of approximately 3.0–3.5 years. This is even more impressive since the authors designed their study to identify the age of onset of symptoms. Many individuals have symptoms of memory loss and cognitive declines several years before presenting for medical diagnosis. The authors designed this study to calculate the duration of survival from a carefully assessed date of onset.

A comparison accounting for the age of this study group moderates the discrepancy of this study with previous studies. The mean age of the study group was nearly 84 years of age. The median age of survival at age 85 in the general population is 5.0 years.

The strongest predictor of survival was age at the time of onset of symptoms. Younger individuals from 65 to 74 years of age lived 5.70 years with their disease. This is closer to the years of survival reported in previous studies.

What is most important for patients and their families, along with public policy planners and insurers, is not only the years of survival but also the duration of the stages of dementia. The clinical community is now focusing on early identification that will allow early treatment. It is hoped that early therapeutic intervention will reduce the pain and burden of morbidity. The future effectiveness of treatment on both total morbidity and survival is yet to be determined.