LETTERS TO THE EDITOR

RE: "HYPOTHESIS: LOW SERUM CHOLESTEROL, SUICIDE, AND INTERLEUKIN-2"

TABLE 1. Standardized male death rate from cardiovascular diseases and suicides in three neighboring pairs of democratic and postcommunist countries in Europe*

<table>
<thead>
<tr>
<th>Country</th>
<th>Age-standardized death rate/100,000</th>
<th>Diseases of the circulatory system</th>
<th>Suicide and self-inflicted injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>474</td>
<td>805</td>
<td>420</td>
</tr>
<tr>
<td>Hungary</td>
<td>805</td>
<td>59</td>
<td>23</td>
</tr>
<tr>
<td>Greece</td>
<td>420</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>818</td>
<td>25</td>
<td>44</td>
</tr>
<tr>
<td>Sweden</td>
<td>360</td>
<td>933</td>
<td>833</td>
</tr>
<tr>
<td>Estonia</td>
<td>933</td>
<td>44</td>
<td>44</td>
</tr>
</tbody>
</table>


The recent paper by Penttinen (1) postulates an interesting hypothesis concerning serum lipids, depression, and atherosclerosis. According to the hypothesis, oxidized low density lipoprotein activates T cells, resulting in the production of interleukin-2 that suppresses the melatonin secretion of the pineal gland. The decreased melatonin levels lead to depression and a suicidal tendency. Simultaneously, increased levels of oxidized low density lipoprotein and of interleukin-2 potentiate the atherosclerotic process. Briefly, atherosclerosis and violent death may have two common causal factors, oxidized low density lipoprotein and interleukin-2.

If this hypothesis is correct, there will be a correlation between cardiovascular mortality and mortality due to suicide. I have correlated the latest available World Health Organization data (2) on the standardized death rate from cardiovascular disease and suicide in males from 45 countries. The medium close direct linear correlation was found ($r = 0.392, p = 0.008$). In some European postcommunist countries, male mortality caused by cardiovascular disease and by suicide is substantially higher than in neighboring democratic countries (table 1). The analysis of plasma levels of oxidized low density lipoprotein and of interleukin-2 in a stratified random sample of men living in two neighboring countries with very different mortality rates (e.g., Austria and Hungary) could elucidate the question of whether plasma levels of oxidized low density lipoprotein and of interleukin-2 could be a sensitive determinant for cardiovascular diseases and suicidal tendency.


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THE AUTHOR REPLIES

Dr. Emil Ginter has made a very interesting calculation. He has compared the incidence rates of suicides and mortality from ischemic heart disease in different countries (1). The positive correlation between mortality for suicide and mortality for ischemic heart disease found by Dr. Ginter supports my hypothesis (2). However, the interpretation of that correlation has to be made with caution, because there are a lot of confounding factors. The number of suicides depends by a complex way on biologic, social, and cultural factors. I have made a suggestion concerning the possible biologic mechanism. If that hypothesis is going to be tested, it is necessary to take the potential confounding factors into account.

The suggestion of Dr. Ginter concerning testing of the hypothesis is of interest. The comparison of such countries as Austria and Hungary or Sweden and Estonia is, however, quite problematic. The statistics may not be fully comparable in different countries because of differences in defining the cause of death and also because of different ways of collecting data for statistics. Social and cultural factors may also positively influence the correlation.

There already are some observations linking cytokines and depression or suicidal tendency, but as far as I know there is no documentation concerning the possible association between serum lipids and endogenous cytokines or cytokines and ischemic heart disease. The first step in testing my hypothesis could be, for example, a study concerning the correlation between the plasma concentration of cytokines (especially interleukin-2) and serum lipids in an unselected population.

REFERENCES

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REFERENCES