Prevalence of Multivessel Coronary Artery Disease in Patients With Diabetes Mellitus Plus Hypothyroidism, in Patients With Diabetes Mellitus Without Hypothyroidism, and in Patients With No Diabetes Mellitus or Hypothyroidism

Mohan Kesani, Wilbert S. Aronow, and Melvin B. Weiss

Cardiology Division, Westchester Medical Center/New York Medical College, Valhalla.

Background. We report the prevalence of significant multivessel coronary artery disease (CAD) (>50% stenosis) in patients with diabetes plus hypothyroidism, in patients with diabetes without hypothyroidism, and in patients without diabetes or hypothyroidism who had significant CAD documented by coronary angiography.

Methods. We performed a retrospective analysis in 100 patients selected randomly with significant CAD documented by coronary angiography to investigate the prevalence of significant multivessel CAD in patients with diabetes, in patients with hypothyroidism, and in patients without diabetes or hypothyroidism.

Results. Significant 3–4-vessel CAD was present in 9 of 10 patients (90%), mean age 73 ± 11 years, with diabetes plus hypothyroidism, in 10 of 25 patients (40%), mean age 63 ± 9 years, with diabetes without hypothyroidism, and in 10 of 65 patients (15%), mean age 68 ± 12 years, without diabetes or hypothyroidism (p < .001 comparing diabetes plus hypothyroidism with no diabetes or hypothyroidism; p < .01 comparing diabetes plus hypothyroidism with diabetes without hypothyroidism; and p < .02 comparing diabetes without hypothyroidism with no diabetes or hypothyroidism). Significant 2–4-vessel CAD was present in 10 of 10 patients (100%) with diabetes plus hypothyroidism, in 20 of 25 patients (80%) without diabetes without hypothyroidism, and in 37 of 65 patients (57%) with no diabetes or hypothyroidism (p < .01 comparing diabetes plus hypothyroidism with no diabetes or hypothyroidism; and p < .05 comparing diabetes without hypothyroidism with no diabetes or hypothyroidism).

Conclusions. In patients with diabetes mellitus plus hypothyroidism, the prevalence of 3-vessel or 4-vessel CAD was significantly higher than in patients with diabetes mellitus without hypothyroidism or in patients with no diabetes mellitus or hypothyroidism. In patients with diabetes mellitus without hypothyroidism, the prevalence of 3-vessel or 4-vessel CAD was significantly higher than in patients without diabetes mellitus or hypothyroidism.

Patients with diabetes mellitus (1–5) and patients with hypothyroidism (6,7) have a high prevalence of coronary artery disease (CAD). We performed a retrospective analysis in 100 patients with significant CAD (>50% stenosis) documented by coronary angiography to investigate the prevalence of significant multivessel CAD in patients with diabetes mellitus, in patients with hypothyroidism, and in patients without diabetes mellitus or hypothyroidism. This article reports the data from this study.

Methods

A retrospective analysis was performed in 100 patients selected randomly with significant CAD (>50% stenosis) documented by coronary angiography to investigate the prevalence of significant multivessel CAD in patients with diabetes mellitus, in patients with hypothyroidism, and in patients without diabetes mellitus or hypothyroidism. Diabetes mellitus was diagnosed according to the American Diabetes Association’s new criteria (8). Hypothyroidism was diagnosed if the serum thyroid-stimulating hormone level was elevated (>4.7 μU/ml) and the thyroxine (T4) level was in the normal range.

For analyses comparing the 3 groups, Student’s t tests were used to analyze continuous variables, and chi-square tests were used to analyze dichotomous variables.

Results

Table 1 shows the baseline characteristics for the 3 groups of patients with diabetes mellitus plus hypothyroidism (n = 10), diabetes mellitus without hypothyroidism (n = 25), and no diabetes mellitus or hypothyroidism (n = 65). Table 1 also lists levels of statistical significance. None of the 100 patients had hypothyroidism without diabetes mellitus.

Table 2 shows the prevalence of 3-vessel or 4-vessel CAD, of 2–4-vessel CAD, and of 1-vessel CAD in patients with diabetes mellitus plus hypothyroidism, diabetes mellitus without hypothyroidism, and no diabetes mellitus or hypothyroidism. Table 2 also lists levels of statistical significance.

Discussion

Cardiovascular disease is very common in elderly persons (9). Diabetics with CAD have a high prevalence of
multivessel CAD (3, 4). To the best of our knowledge, the prevalence of multivessel CAD in patients with diabetes mellitus plus hypothyroidism has not been previously reported. Since none of our patients with documented CAD had hypothyroidism without diabetes mellitus, we were unable to investigate the prevalence of multivessel CAD in patients with hypothyroidism without diabetes mellitus.

The data from the present study showed that, in patients with angiographically documented CAD, 3-vessel or 4-vessel CAD was present in 90% of patients with diabetes mellitus plus hypothyroidism, in 40% of patients with diabetes mellitus without hypothyroidism, and in 15% of patients without diabetes mellitus or hypothyroidism. The prevalence of 2–4-vessel CAD was 100% in patients with diabetes mellitus plus hypothyroidism, 80% in patients with diabetes mellitus without hypothyroidism, and 57% in patients without diabetes mellitus or hypothyroidism.

In patients with diabetes mellitus plus hypothyroidism, the prevalence of 3-vessel or 4-vessel CAD was significantly higher than in patients with diabetes mellitus without hypothyroidism or in patients with no diabetes mellitus or hypothyroidism. In patients with diabetes mellitus without hypothyroidism, the prevalence of 3-vessel or 4-vessel CAD was significantly higher than in patients without diabetes mellitus or hypothyroidism. The high prevalence of hypercholesterolemia (10, 11) and of hypertension (12) in our patients with diabetes mellitus and hypothyroidism were the major coronary risk factors that contributed to these findings in our study.

Table 2. Prevalence of Multivessel Coronary Artery Disease in Patients With Coronary Artery Disease and Diabetes Plus Hypothyroidism, Diabetes Without Hypothyroidism, and No Diabetes or Hypothyroidism.

<table>
<thead>
<tr>
<th></th>
<th>Diabetes Plus Hypothyroidism (n = 10)</th>
<th>Diabetes Without Hypothyroidism (n = 25)</th>
<th>No Diabetes or Hypothyroidism (n = 65)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3–4-vessel coronary artery disease</td>
<td>9 (90%)</td>
<td>10 (40%)</td>
<td>10 (15%)</td>
</tr>
<tr>
<td>2–4-vessel coronary artery disease</td>
<td>10 (100%)</td>
<td>20 (80%)</td>
<td>37 (57%)</td>
</tr>
<tr>
<td>1–vessel coronary artery disease</td>
<td>0 (0%)</td>
<td>5 (20%)</td>
<td>28 (43%)</td>
</tr>
</tbody>
</table>

Notes: For 3–4-vessel disease: p < .01 comparing 1 with 3; p < .05 comparing 1 with 2; p < .02 comparing 2 with 3. For 2–4-vessel disease: p < .01 comparing 1 with 3; p < .05 comparing 2 with 3. For 1–vessel disease: p < .01 comparing 1 with 3; p < .05 comparing 2 with 3.