

Use of hormone replacement therapy among cardiac patients at a Canadian academic centre

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Abstract

Background: Although hormone replacement therapy (HRT) is associated with a reduced risk of coronary artery disease (CAD), use of this treatment among postmenopausal women is not widespread. The authors sought to determine the extent of HRT use in a select population of women at high risk for CAD.

Methods: A cross-sectional survey was performed involving all consecutive postmenopausal women who attended a cardiology clinic in a Toronto teaching hospital between January 1996 and August 1997. A chart review was followed by a telephone interview with the patients or their physicians. The utilization rate of HRT was obtained. Predictors of HRT use were identified using a multivariate logistic regression model.

Results: A total of 80 women with risk factors for CAD, symptoms suspicious of CAD or definite CAD diagnosed after cardiac investigations were included in the survey. Information on HRT use or nonuse was documented in 17 (21%) of the charts. Of the 72 women for whom data on HRT were available 16 (22%) were currently using it, 41 (57%) were not, and 15 (21%) had used it in the past. Five women (7%) were receiving HRT but there was no chart documentation. On multivariate analysis, younger women were more likely than older women to use HRT (odds ratio 0.91, 95% confidence interval 0.22–0.96; $p < 0.05$). Coronary risk profile, CAD diagnosis and history of hysterectomy were not associated with HRT use. Of the 41 women who had never received HRT 10 (24%) had possible contraindications (e.g., breast cancer or deep vein thrombosis); the proportion was similar in the group of women who were current or past users of HRT (29%).

Interpretation: Documentation of HRT use in patient charts is lacking. Few women in the study who were at risk for CAD were currently using HRT. The data support the need for better adherence to optimal practices in the management of women at high risk for CAD.

Risk factors for coronary artery disease (CAD) include hypertension, smoking, hyperlipidemia, diabetes mellitus and a family history of premature CAD. Modification of risk factors has been shown to be beneficial in primary^{1,2} and secondary³⁻⁵ prevention. The hypoestrogenic postmenopausal state is considered to be a risk factor for atherosclerosis and should be addressed in the management of women at high risk for CAD.

Hormone replacement therapy (HRT) is associated with a 35%–50% reduction in the risk of CAD.⁶⁻¹¹ Grady and associates⁹ calculated that a woman at no increased risk for heart disease would gain one additional year of life if she were using HRT.⁹ Among women with CAD, there is an association between estrogen use and decreased mortality,¹² as well as improved results following coronary angioplasty.¹³ Two prospective randomized controlled trials are currently assessing HRT as primary and secondary prevention for CAD.^{14,15} Although one trial has been published,¹⁵ final data from both will not be available until the next millennium.

Despite physiologic and epidemiologic evidence for postmenopausal hormonal protection, its use remains low. A recent longitudinal study involving 2500 women in the United States indicated that the overall prevalence of HRT use was 12.3%.¹⁶ The rate was notably higher after surgical menopause than after natural menopause (45.0% v. 4.5%). Data from coronary angioplasty studies suggest that the rate of HRT use among



Evidence

Études

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women with CAD is less than 20%.^{12,13} There has been no published evaluation to date of current Canadian practice patterns of HRT among women at high risk for CAD.

The purpose of our survey was to assess HRT use among postmenopausal women referred to a cardiology clinic at a Canadian academic centre. We hypothesized that use would be higher in this select population than in the general population, because current practice guidelines state that all women with CAD should consider HRT^{17,18} and because there is strong evidence for the cardioprotective effects of HRT.⁶⁻¹¹ Moreover, women at high risk for CAD or osteoporosis are more likely to accept HRT if approached.¹⁹

Another objective was to determine the relation between when HRT was initiated and the dates of certain cardiovascular events, positive findings on cardiac investigations and menopause.

Methods

This survey was a collaborative effort between the Women's Health Program and the Division of Cardiology and was approved by the Human Subjects Review Committee at The Toronto Hospital. We included all consecutive female patients who were seen at a general cardiology clinic in a tertiary care hospital from January 1996 to August 1997. The list of patients was acquired from the hospital computer system, in which all patients seen in the clinic are registered.

We designed a form to record data from patient charts. It included questions about diagnosis, CAD risk factors, previous cardiovascular events, cardiac investigations, revascularization surgery, presence or absence of chart documentation about menopausal status and HRT use, menopausal status, HRT use and relative contraindications to use (family or personal history of breast or gynecological cancer, or personal history of deep vein thrombosis or pulmonary embolus).

The patient charts were reviewed by an unbiased observer to determine eligibility. We included women who had definite CAD, probable CAD, suspected CAD or symptoms suggesting CAD but not yet confirmed. We excluded those with congenital heart disease, rheumatic heart disease, isolated hypertension, infectious endocarditis, pericarditis, cardiomyopathy, pre-syncope, syncope, arrhythmia or palpitations in the absence of known associated CAD.

For the purpose of our study, we defined patients with definite CAD as those with a history of myocardial infarction, abnormal findings on coronary angiography or a final diagnosis of CAD as charted by the staff cardiologist. Patients with probable CAD were those with 2 or more positive results on cardiac investigations (exercise stress test, nuclear stress test, echocardiogram). Those with suspected CAD had 1 positive result on cardiac investigation. Patients whose symptoms were not yet diagnosed were defined as those with presenting complaints compatible with CAD (chest pain or shortness of breath on exertion) but not yet diagnosed at the time of review, or those with negative results on cardiac investigation.

Menopausal status and information on HRT use was determined either from the patient chart or during an interview with the patient or her referring physician. Menopause was defined as natural (cessation of menses for 1 year) or surgical (hysterectomy with bilateral oophorectomy). HRT was defined as oral or transdermal estrogen therapy, with or without progesterone. Estrogen vaginal cream was not considered to be HRT. We divided the women into 2 groups: those who were currently using HRT or who had used it in the past and those who had never used it.

Hyperlipidemia was defined as a low-density lipoprotein level greater than 3.4 mmol/L, a high-density lipoprotein level of less than 0.9 mmol/L and a triglyceride level of more than 2.6 mmol/L.¹⁵ A family history of CAD was defined as a relative with CAD (male less than 55 years old or female less than 65). A family history of breast or gynecological cancer was defined as a first-degree relative with these conditions.

To analyse the data, numeric codes were developed to examine patient profiles and data entered into a database we designed. All data are expressed as mean (and standard deviation [SD]). Analysis of variance was performed to compare differences in age between the 2 groups. The χ^2 test was used to compare rates of HRT use between the groups. A stepwise multivariate logistic regression analysis was performed with HRT use as the dependent variable. A *p* value of less than 0.05 was considered to be statistically significant.

Results

During the study period 348 patients were assessed in the cardiology clinic, 102 of whom were women. Ninety-four of the women (92%) met our cardiac inclusion criteria; 80 (85%) of them were postmenopausal and comprised our sample (Tables 1 and 2). In a few instances, there were missing data because of insufficient charting or recollection by patients or physicians.

Twenty (25%) of the women had had a myocardial infarction, 5 (6%) had had a stroke or transient ischemic attack, and 4 (5%) had had both. Among the 43 women with definite CAD, the disease was diagnosed using coronary angiography in 35 (81%).

Documentation of menopausal status was present in 32 (40%) of the 80 charts. The mean age of these women was significantly lower than that of the 48 women whose charts lacked documentation (63 [SD 12] years v. 72 [SD 9] years, *p* < 0.05). HRT use or nonuse was documented in 17 charts (21%). Interviews with the remaining 63 patients or their physicians revealed that a further 5 women were currently using HRT and 11 had used it in the past. Menopausal status and HRT information was obtained for 72 women (90%) of the 80 women.

Of the 72 women, 16 (22%) were currently using HRT, 15 (21%) had used it in the past, and 41 (57%) had never used it. Of the 16 currently using HRT, 11 were taking estrogen alone (all had undergone hysterectomy) and 5 were taking estrogen and progesterone. Seven (13%) of the 53 women with definite, probable or suspected CAD were currently using HRT and had been using it for a mean of 13 (SD 11) years.

Information on risk factors was known for 78 of the women. The proportion of women who were current or past users of HRT did not differ significantly between those with fewer than 2 risk factors for CAD and those with 2 or more risk factors (35% [9/26] v. 40% [21/52] respectively).

In the stepwise multivariate logistic regression analysis with HRT use as the dependent variable, and age, duration of menopause, hysterectomy, definite CAD and more than 2 risk factors for CAD as independent variables, we found that age was the only significant predictor of HRT use. Younger women were more likely than older women to use HRT (*p* = 0.005, odds ratio 0.91, 95% confidence interval 0.22-0.96).

In the group of 31 women who were current or past



users of HRT, we compared the dates the therapy was initiated with the dates of cardiovascular events, positive findings on cardiac investigations and menopause. One woman (3%) started using HRT after having a cardiovascular event and another (3%) after a positive finding on cardiac investigation. Most (21 [68%]) started HRT after menopause, and about two-thirds of them started after surgical menopause. For the remaining 8 women (26%), there was no association between HRT initiation and such events.

Interpretation

Our survey demonstrated that only 13% of women with definite CAD and 22% of women at high risk for CAD were currently using HRT. Although slightly higher than the rate of use in the general population,¹⁶ HRT use in our select population was still low. These low rates were found before publication of the Heart and Estrogen/progestin

Replacement Study (HERS), in which hormone use was not shown to decrease the number of cardiac events among women with established CAD.¹⁵ A comprehensive discussion of the HERS study is beyond the scope of our paper, but the results cannot be extrapolated to other patient groups given the specific population studied (mainly women who had undergone cardiac revascularization). The Women's Health Initiative and trials evaluating selective estrogen receptor modulators are currently under way. Until the results of these larger trials are available, the best course of management for women with established CAD and for those with CAD risk factors remains unclear.

Although not assessed directly in our survey, the low rate of HRT use is comparable to the underutilization of other preventive strategies for ischemic heart disease in women, such as lipid-lowering therapy.¹⁵ Several factors can help explain the underutilization of HRT in this high-risk population. First, physicians may not have considered HRT in the management

Table 1: Characteristics of women attending a cardiology clinic who were current or past users of hormone replacement therapy (HRT) and those who had never used it*

Characteristic	Ever used HRT <i>n</i> = 31	Never used HRT <i>n</i> = 41	<i>p</i> value
Profile			
Mean age (and SD), yr	63 (10)	72 (9)	0.001
Mean duration of menopause (and SD), yr	19 (12)	24 (10)	NS
Surgical menopause	14 (12)	25 (11)	
Natural menopause	20 (15)	24 (9)	
No. (and %) of women who had hysterectomy	18 (58)	11 (27)	0.015†
No. (and %) of women with contraindications to hormone use	9 (29)	10 (24)	NS
Diagnosis,‡ no. (and %) of women			
Definite CAD	10 (32)	27 (66)	0.01†
Probable CAD	2 (6)	0	
Suspected CAD	3 (10)	5 (12)	
Definite, probable or suspected CAD	15 (48)	32 (78)	0.018†
Symptoms not yet diagnosed	16 (52)	9 (22)	0.018†
Risk factor,§ no. (and %) of women			
Hypertension	17 (57)	27 (66)	
Hyperlipidemia	16 (53)	26 (63)	
Diabetes mellitus	5 (17)	11 (27)	
Smoking (past or current)	18 (60)	13 (32)	
Family history of CAD	15 (50)	16 (39)	
2 or more risk factors for CAD	21 (70)	29 (71)	NS

Note: SD = standard deviation, NS = not significant, CAD = coronary artery disease.

*Hormone use data known for 72 of the 80 women surveyed.

†On multivariate analysis, there was no significant difference between the 2 groups.

‡See Methods for definitions.

§Risk factor data known for 30 of the 31 women who ever received HRT.

Table 2: Characteristics of women currently using HRT and those who had used it in the past

Characteristic	Currently using HRT <i>n</i> = 16	Used HRT in past <i>n</i> = 15	<i>p</i> value
Mean age (and SD), yr	59 (9)	67 (9)	0.004
Median duration of HRT use, yr	8	0.25	0.004
No. (and %) of women who had hysterectomy	11 (69)	7 (47)	NS
No. (and %) of women with contraindications to hormone use	3 (19)	7 (47)	NS



of their postmenopausal patients with CAD. HRT use or nonuse was noted in the charts of only 21% of the women, and further inquiry revealed that only 25% of the remaining women had a history of hormone use. Despite the current uncertainty created by the HERS data, it is evident that in the pre-HERS era, cardiologists were not following suggested guidelines. Evaluation of practice patterns are needed on an ongoing basis to ensure optimal health care delivery.

Counselling women at high risk for CAD about hormone use requires time and individual discussion, but this step is important because a woman's decision to use HRT is influenced by her physician's attitude toward it.²⁰ In a survey of women who had never used HRT almost 75% said that they would consider using it if it was recommended by their physician.²¹

Patients' perception of individual risk also plays a role in HRT decision-making. For example, many women perceive breast cancer as a more serious threat than heart disease,^{22,23} despite the fact that CAD is a leading cause of morbidity and mortality among North American women and kills about 25 000 Canadian women annually.²⁴

In our survey, only a minority of women had possible (and not necessarily absolute) contraindications to HRT use. Given the overall risk profile of the cohort, one could hypothesize that more women would accept HRT if offered it. Long-term compliance with HRT can reach 80% at 2 years' follow-up.²⁵

There were limitations to our survey. We did not validate self-reported menopausal status or hormone use, so there may have been recall bias. Most women, however, have an accurate estimate of menopause and would likely recall HRT use. The diagnosis of definite CAD was potentially inaccurate, because we included "chart documentation by the staff cardiologist." However, if a patient was thought to have CAD, HRT should have been considered in her management. Although the sample may not represent all cardiology patients or cardiologists in this teaching hospital, one would expect the standard of care to be implemented.

In conclusion, the striking lack of chart documentation and low rates of HRT use among women at high risk for CAD in this survey underscores the need for greater physician awareness and adherence to optimal patient management information. Further studies are needed to evaluate decision-making regarding HRT use among women at risk for CAD.

Regardless of physician or patient preference or ultimate decision, it is reasonable that HRT still be considered in the management of postmenopausal women at high risk for CAD. It is also reasonable that information about menopausal status and HRT use be documented in patient charts. These issues should be raised by all cardiologists seeing women at high risk for CAD so that further management can be pursued in coordination with primary care physicians or gynecologists.

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