

New light on the Yentl syndrome

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In 1991 Bernadine Healy, the first woman director of the US National Institutes of Health, summarized two studies in the July issue of *New England Journal of Medicine*, demonstrating sex bias in the management of coronary heart disease^[1]. In the first study, women in Maryland and Massachusetts were less likely than men to be referred to diagnostic and therapeutic measures, when admitted for an acute coronary event^[2]. In the second study, women who had been found to have significant coronary disease were as likely as men to undergo revascularization, but the investigations leading to catheterization were less likely to occur in women^[3]. The latter study was quoted as an illustration of the Yentl syndrome: 'Once a woman showed that she was just like a man, by having severe coronary artery disease . . . , then she was treated as a man would be'. Yentl was the young heroine in Nobel prize recipient Isaac Singer's short story from the Lublin Jewish community. Yentl had to dress and act like a boy to be able to attend school and get educated in the Talmud^[4].

These publications were followed by a 'cascade' of studies examining gender differences in cardiovascular disease parameters, including diagnostic and therapeutic policies practised in world wide cardiology. Gender comparisons were rendered particularly difficult because life-time development of coronary atherosclerosis in men and women differ. Women with well functioning ovaries and adequate circulating reproductive hormones seem to be protected against progression of atherosclerosis until menopause, their sharp increase in coronary incidence therefore occurring about ten years later than in men. By the age of 70, women have as much coronary disease as men, but they also have more complicating other conditions, which may cause cardiologists to refrain from aggressive therapeutic procedures^[5].

The debate, whether women were under-diagnosed and under-treated, was at times overheated, such as the news magazine *Der Spiegel* accusing German cardiologists of 'Sexismus auf der Herzstation' (Sept. 1994)^[6]. This debate, however, had one positive effect — to raise public consciousness of the fact that women get virtually as much coronary disease as men — only at an older age. Few investigators would

acknowledge old age by itself, as a reason for paying less attention to women patients.

In this issue, Dutch cardiologists Roeters van Lennep and co-workers report on a population-based survey of patients referred for coronary angiography to the Leiden University Clinic from 1981 to 1997^[7]. In as much as referral practices to the cardiologists in the area were not gender-biased, the authors were able to show that women patients were not disadvantaged, either before, or after the famous 1991 editorial by Healy. Women patients, who were referred to angiography and qualified for the study by having significant (>60%) stenosis, had the same prevalence of one-, two- and three-vessel disease or left main disease as did men, and the localization of clinically significant lesions was similar in the two sexes. Furthermore, revascularization procedures were slightly more often used in women than in men. Although the difference was modest (5–10%), at least the hypothesis of women being undertreated as compared to men, was refuted.

However, the authors also state in their Methods section, that '43% of all women patients undergoing angiography, but only 19% of men patients, had normal coronary arteries'. The reasons for these considerable gender differences, which have also been found in other population based studies, are not known. Gender differences in diagnostic sensitivity, and/or specificity of the clinical examinations leading to angiography may be one explanation. Differences in clinical presentation and symptom profile may be another. In a recent North American study women who were admitted to the coronary care units more often presented with unstable angina rather than acute myocardial infarction, possibly suggesting a slower pace of the acute onset phase as compared to men^[9]. In another US study young women patients who presented with an acute myocardial infarction had a higher in-hospital mortality and a more ominous risk factor profile than men^[8]. This also applies to the contribution of social and psychological factors to the coronary risk in younger women. Both low education and low occupation carry a higher risk load in women than in men. The increased risk in women of low socio-economic groups seems to be largely explained by behavioural factors including poor health habits and stresses of work and family obligations^[10]. Furthermore, being emotionally depressed is more common in women than in men

and is often linked to perceived lack of emotional and social support. Both these factors have been shown to increase coronary risk in women^[11,12].

Therefore, even if the Yentl syndrome has lost some of its relevance, these observations clearly motivate further research on women's coronary disease and risk factor profiles. Furthermore, studies that highlight the differences — or lack of differences — between men and women are still needed.

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Exercise testing, still the method of choice when evaluating patients with chronic stable angina pectoris

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Non-invasive assessment of patients with coronary artery disease has undergone substantial development during recent years. This includes sophisticated radio-nuclide and ultrasound technology and the use of various pharmacological stress methods. However, the 'old fashioned' exercise ECG test is still the most widely used non-invasive method to verify or confirm the diagnosis of coronary artery disease, and to predict severity and long-term prognosis. Exercise testing gained popularity due to its feasibility, safety, low cost and multiple implications. Therefore the paper by Forslund and co-workers^[1], presenting data on exercise tests in the APSIS study, is of great

importance for all clinicians handling patients with chronic stable angina pectoris.

Despite the lack of a general consensus on the best exercise modality and protocol, the variables that should be recorded and assessed during an exercise test have been agreed^[2]. Exercise capacity, occurrence and degree of ST-segment depression, and blood pressure and heart rate response are all valuable for diagnostic and prognostic purposes. Other parameters are the double product of heart rate and systolic blood pressure, the ST/HR index, and the Duke index, which incorporates exercise capacity, ST-depression and angina pectoris^[3]. The diagnostic and prognostic power of exercise testing is much dependent on the examined population. Age, gender, previous ischaemic events, previous revascularization