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*Risk factors in men and women over 45 years of age  
in the population of Lublin*

In the period before 40–50 years of age ischaemic heart disease is diagnosed in men, however, it seldom occurs in women. After that period the situation changes and cardiovascular diseases are one of the death causes also among women. People from the age group between 40 and 50 years of age are in the period of full professional activity and at the same time they show a higher interest in their health state than other age groups becoming good candidates for prophylactic examinations (1, 2, 3, 4, 5).

The aim of the work is to compare the kinds and incidence of cardiovascular risk in the population of men and women over 45 years of age and the estimation of participation of particular risk factors in groups of the highest risk.

Typical risk factors for ischaemic heart disease (i.h.d) were analyzed, such as arterial hypertension (AII), cigarette smoking, age, increased levels of particular lipid fractions, obesity, coexistence of diabetes, positive family history (6, 7, 8, 9, 14).

MATERIAL AND METHODS

The studies included the patients reporting to the Outpatients' Clinic for the Prevention of Cardiovascular System Diseases after the programme of cardiovascular diseases prophylaxis had been announced in the press. 892 people over 45 years of age were examined, aged from 45 to 60 (average age – 53.2) between September 2000 and February 2001. In the studied population there were 437 women (W) (68.93%), average age  $53.2 \pm 6.8$  and 197 men (M) (31.07%), average age  $52.43 \pm 7.6$ .

From all the reporting patients history data were taken according to the standardized scheme, registered by means of a questionnaire. Height, body mass and BMI were determined, ECG and physical examination (including systolic RRs and diastolic RRd blood pressure at rest) were carried out. lipidogram was determined, blood samples being taken after 12 hours of starvation. Among the studied patients 604 people reported to the hospital laboratory to have their lipidograms determined: total cholesterol (TCh), LDL-cholesterol (LDL), HDL-cholesterol (HDL), triglycerides (TG). For the above determinations bioMerieux kits were used, applying the enzymatic method. For the statistical workout Statistica 5.0 computer programme was used. The criteria of the Polish Cardiological Society from the year 2000 were the basis to estimate the cardiovascular risk in the studied population (1).

RESULTS

Positive family history was found in 18.9% women and in 20.91% men ( $P = 0.05$ ). In the studied population coronary heart disease diagnosed earlier occurred in 3.19% women and in

14.86% men, arterial hypertension diagnosed earlier occurred in 30.31% women and in 41.71% men, diabetes diagnosed earlier occurred in 3.46% women and in 8.57% men. In the population of women there were 28.3% smokers; 26.09% women smoked up to 20 cigarettes daily, 2.75% women smoked over 20 cigarettes daily, 71.17% women did not smoke. In the studied population of men 41.84% were smokers, 33.16% men smoked up to 20 cigarettes daily, 8.67% men smoked over 20 cigarettes daily. 58.16% men were nonsmokers. The comparison of smoking frequency in the group of men and women is shown in Figure 1.

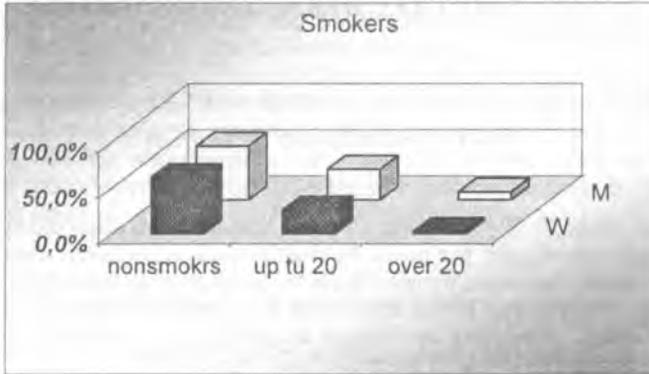


Fig. 1. Comparison of smoking frequency in the group of men and women

In the studied population of women the average body mass was 71.54 kg (from 44 kg to 114 kg) and in men it was 85.01 kg (from 55 kg to 125 kg). The average height in the population of women was 161.97 cm (from 144 cm to 180 cm) and in the population of men 173.41 cm (from 158 to 191 cm). On the basis of the height and body mass measurements BMI was calculated. BMI below 20 occurred in 4.16% women and in 1.03% men. BMI between 20 and 24.9 occurred in 31.87% studied women and in 21.03% men ( $P = 0.05$ ); BMI between 25 and 29.9 was found in 37.88% women and in 44.10% men ( $P = 0.05$ ); BMI from 30 to 39.9 was found in 25.4% women and 33.85% men ( $P = 0.05$ ); BMI  $\geq 40$  in 0.69% women but was not found in men. BMI values in the population of men and women are shown in Figure 2.

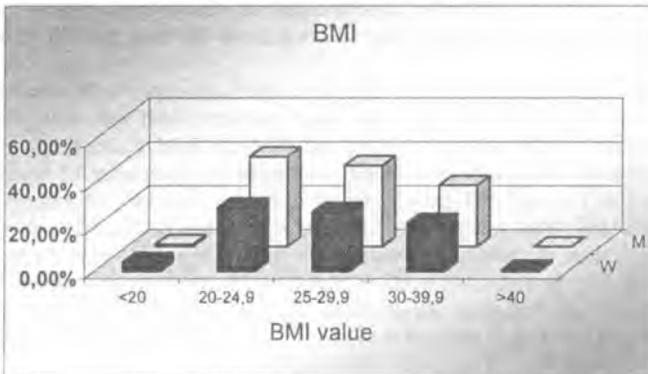


Fig. 2. Comparison of BMI values in the group of men and women

In the population of women average TCh concentration was  $208.79 \pm 33.4$  mg%, and in the population of men –  $205.27 \pm 32.11$  mg% ( $P = 0.29$ ). In the population of women average LDL concentration was  $122.65 \pm 29.61$  mg% and in the population of men –  $119.84 \pm 28.48$  mg% ( $P = 0.35$ ). In the population of women HDL level was  $62.93 \pm 15.33$  mg% on the average, in the population of men –  $54.61 \pm 15.43$  mg% ( $P = 0.05$ ). In the population of women average TG concentration was  $116.57 \pm 51.74$  mg%, in the population of men –  $150.06 \pm 81.47$  mg% ( $P = 0.05$ ). The comparison of lipidogram values in the group of men and women is shown in Figure 3.

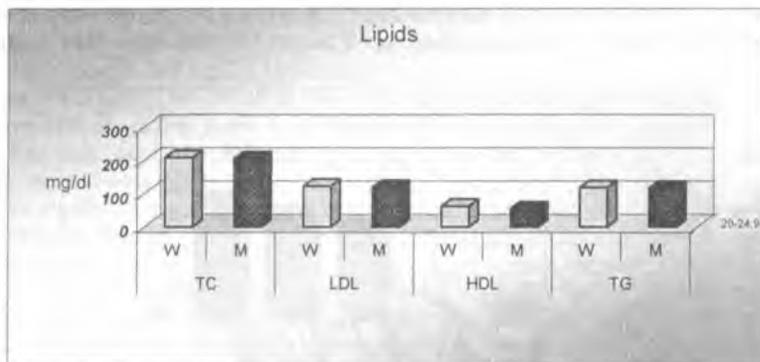


Fig. 3. Comparison of TCh, HDL, LDL and TG levels in the group of men and women

In the population of women average RRs values were  $136 \pm 21.03$  mmHg, in the population of men  $142 \pm 25$  mmHg ( $P = 0.05$ ). Average RRd values were  $85 \pm 12$  mmHg in the population of women and  $95 \pm 15$  mmHg in the population of men ( $P = 0.05$ ). Pulse pressure (systolic-diastolic difference) in the group of women was 50.7 mmHg on the average, in the group of men it was 50.8 mmHg ( $P = 0.96$ ). The comparison of average values of RRs and RRd in the group of men and women is shown in Figure 4.

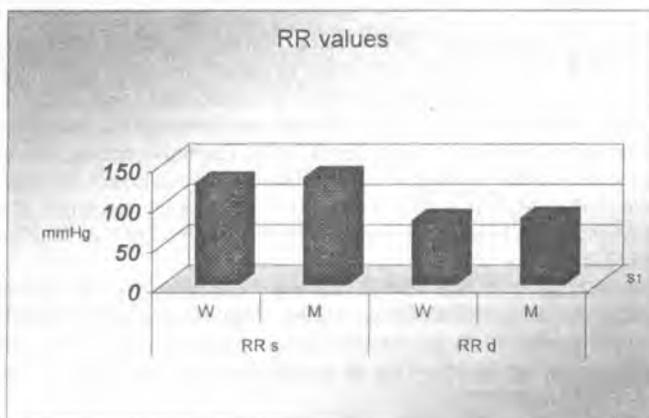


Fig. 4. Comparison of RRs and RRd values in the group of men and women

Third-degree arterial hypertension (AH) (according to ESH/ESC) was found in 5.95% women and 13.71% men ( $P = 0.05$ ). Second-degree AH occurred in 18.54% women and in 22.34% men ( $P = 0.05$ ). First-degree AH was in 26.9% women and 24.37% men ( $P = 0.05$ ). A high normal RR occurred in 14.19% women and in 12.18% men ( $P = 0.05$ ). Normal RR occurred in 18.5% women and 19.80% men. ( $P = 0.05$ ) 16.7% women and 7.61 % men had optimal RR.

Stratification of global risk of cardiovascular complications was made and four categories of risk were distinguished: low, moderate, high and very high. A very high risk of ischaemic heart disease event occurred in 15.33% women and in 37.56% men ( $P = 0.05$ ). A high risk occurred in 17.39% women and in 32.99% men ( $P = 0.05$ ). A moderate risk concerned 28.6% women and 27.92% men ( $P = 0.05$ ). A low risk occurred in 16.25% women but did not occur in men. The comparison of incidence of coronary risk categories in men and women is shown in Figure 5.

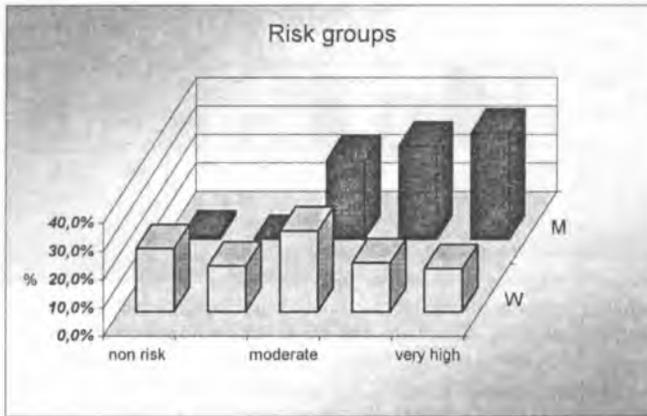


Fig. 5. Comparison of incidence of coronary risk categories (very high, high moderate and low) in men and women

## DISCUSSION

In the studied population positive family history, earlier diagnosed ischaemic heart disease, hypertension and diabetes were significantly more frequently found in men compared with the group of women. In the group of men the incidence of obesity and overweight was significantly higher than in women. Obesity occurred in 33.85% men and overweight in 44.10%; in the group of women obesity concerned 25.4% and overweight 37.88%. Excessive obesity was not observed in men, but it was observed in 0.69% women. Similar data concerning higher incidence of obesity in men were obtained in POL MONICA BIS-Warszawa studies (in the age group 45–54 M: obesity in 35.04%, overweight in 40.15%, W: obesity in 21.77%, overweight in 36.05%) and in other population studies (3, 7, 8).

In our studies average TCh and LDL levels were comparable in the groups of men and women, like in POL MONICA-BIS-Warszawa studies. Also average TCh and LDL values in our population were very similar to those obtained in the population study POL MONICA BIS-Warszawa (for the age group 45–54, TCh W – 213.11 mg%, M – 214.70 mg%; LDL: W – 131.20 mg%, M – 132.88 mg%) (9).

In the studied population LDL >100mg% occurred in 78.8% men and in 75.9% women, LDL >130 mg% occurred in 35.6% men and in 38.1% women. In POL MONICA BIS-Warszawa studies similar, although somewhat higher, incidence of an increased LDL level was observed compared with our population (POL MONICA BIS – Warszawa: LDL>130 mg% for the 45–54 age group: W – 49.66%, M – 49.26%; LDL> 100 mg% W – 84.35%, M – 82.35%) (9). Average

HDL level was significantly higher in the group of women compared with men and TG level was significantly higher in men. The values obtained in our studies are almost identical with those obtained in POL MONICA BIS-Warszawa (for 45–54 age group: HDL W – 59.03 mg%, M – 51.69 mg%; TG: W – 114.39 mg%, M – 150.65 mg%).

In our population average values of RRs and RRd were significantly higher in men compared with the group of women, like in other studies, and at the same time they were comparable with average values obtained in POL MONICA BIS-Warszawa studies (for the 45–54 age group: M – RRs 133.57 mmHg, W – 127.13 mmHg; RRd – M – 87.52 mmHg, W – 82.66 mmHg) (8,9).

Arterial hypertension significantly more frequently concerned men (60.42%) compared with the population of women (51.39%). In POL MONICA studies a lower incidence of arterial blood hypertension was observed (POL MONICA BIS-Warszawa: W – 21.09%, M – 31.39%). Similarly, wrongly controlled arterial hypertension was less frequently found (POL MONICA BIS-Warszawa M – 27.01%, W – 10.20%) than in our studied population (M – 44.98%, W – 49.54%). The above differences may result from blood pressure measurements taken during one doctor's appointment only, not more; however, it did not affect the incidence of other risk factors for ischaemic heart disease (9,10).

In our population the smoking habit more frequently concerned men (41.84%) compared with the population of women (28.3%), like in POL MONICA BIS-Warszawa studies. Various reports reveal the maintenance of high incidence of cigarette smoking in the population of Poland (POL MONICA BIS-Warszawa for the age group 45 – 54: W – 35.37%, M – 51.09%) (11, 12).

In the studied population over 45 years of age a significantly more frequent occurrence of high and very high risk of ischaemic heart disease was observed in the group of men (70.55%) compared with women (30.72%).

An analysis of participation of particular risk factors and their incidence in the population of patients from the groups of the highest risk (high and very high) show that in those groups lipid disorders are among the most frequent, concerning over 3/4 of the studied people (LDL>100 mg% occurs in W: – 85.09%, M – 75.57%), overweight and obesity are equally often observed (W – 74.11%, M – 78.43%). A considerable number of people from the groups of high and very high risk are chain smokers (W – 53.86%, M – 58.67%).

Positive family history occurred in 16.81% women and 22.34% men; 9.78% women and 19.88% men had ischaemic disease diagnosed earlier. Diabetes occurred earlier in 10.59% women and 11.47% men; 36.32% women and 39.91% men had wrongly controlled arterial hypertension.

On the basis of the above results one can conclude that the incidence of risk factors such as lipid disorders, obesity, arterial hypertension and cigarette smoking in the population of Lublin after 45 years of age is higher in men, which is consistent with the results of other population studies. It is necessary to take further educational activities aiming at the change in lifestyle and at pharmacotherapy to reduce the threat of ischaemic heart disease.

## CONCLUSIONS

1. In the group of men the incidence of obesity, overweight and lipid disorders was significantly higher than in women.
2. Arterial hypertension more frequently concerned men compared with the group of women. Average RRs and RRd values were significantly higher in men compared with the group of women.
3. Cigarette smoking was significantly more frequent in men compared with the population of women.
4. High and very high global cardiovascular risk was found between 45 and 60 years of age in 70% men and in about 32% women.
5. In the groups of the highest risk (high and very high): lipid disorders concern more than ¾ of the studied patients (LDL >100 mg% occurs in W – 85.09%, M –

75.57%); overweight and obesity (W – 74.11%, M – 75.57%) and arterial hypertension (W – 74.14%, M – 70.15%) are equally often observed. A considerable number of people from the groups of high and very high risk are chain smokers (W – 53.86%, M – 58.67%).

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#### SUMMARY

The aim of the work was to estimate the incidence of cardiovascular risk in men and women between 45 and 60 years of age. The studies were made on 892 people reporting successively to the Outpatients' Clinic for the Prophylaxis of Cardiovascular Diseases. The patients' history was taken by means of a questionnaire; physical examination (including blood pressure measurement) and ECG were carried out. BMI was calculated, lipidogram was determined. The studies included 982 people between 45 and 60 years of age (68.93% women and 31.07% men). Positive family history was found in 18.9% women and 20.91% men ( $P = 0.05$ ), earlier diagnosed cardiovascular disease occurred in 3.19% women and 14.86% men, 30.31% women and 41.71% men had arterial hypertension and 3.45% women and 8.57% men suffered from diabetes. In the population of women average concentration of TCh was  $208.79 \pm 33.4$  mg% and in the population of men it was  $205.27 \pm 32.11$  mg%. In the population of women average LDL concentration was  $122.65 \pm 29.61$  mg% and in the population of men it was  $119.84 \pm 28.48$  mg% ( $P = 0.35$ ). Arterial hypertension significantly more frequently occurred in men (60.42%) compared with women (28.3%). Cigarette

smoking habit occurred significantly more frequently in men (41.84%) compared with women (28.3%). Obesity was significantly more often observed in men (M – 33.85%, W – 25.4%), as well as overweight (W – 37.88%, M – 44.10%). Stratification of cardiovascular risk was made according to the criteria of Polish Cardiovascular Society. A very high risk of ischaemic heart disease event occurred in 15.33% women and in 37.56% men ( $P = 0.05$ ). A high risk occurred in 17.39% women and in 32.99% men ( $P = 0.05$ ). The participation of particular risk factors in the groups of the highest risk was analyzed. In the groups of high and very high risk lipid disorders concerned over  $\frac{1}{4}$  of the studied people (LDL >100 mg% occurs in W – 85.09%, in M – 75.57%), as often as overweight and obesity (W – 74.11%, M – 78.43%) and arterial hypertension (W – 74.14%, M – 70.15%). A considerable number of people from the groups of high and very high risk were chain smokers (W – 53.86%, M – 58.67%). The incidence of risk factors for ischaemic heart disease in the studied population of men and women between 45 and 60 years of age was very similar to that observed in many population studies. Higher incidence of risk factors was observed in the population of men compared with the population of women.

#### Czynniki ryzyka choroby niedokrwiennej serca u mężczyzn i kobiet po 45 roku życia w populacji Lublina

Celem pracy była ocena rozpowszechnienia czynników ryzyka choroby niedokrwiennej serca u kobiet i mężczyzn między 45 a 60 rokiem życia. Badania przeprowadzono u 892 osób zgłaszających się do Poradni Profilaktyki Chorób Układu Krążenia. Wywiad rejestrowano za pomocą kwestionariusza, przeprowadzono badanie fizykalne, pomiar ciśnienia tętniczego krwi, obliczono BMI, oznaczono lipidogram, wykonano ekg. Badaniami objęto 892 osoby między 45 a 60 rokiem życia (w tym 68,93% kobiet i 31,07% mężczyzn). Obciążający wywiad rodzinny stwierdzono u 18,9% kobiet i u 20,91% mężczyzn ( $P = 0,05$ ), wcześniej rozpoznaną chorobę wieńcową miało 3,19 % kobiet i 14,86% mężczyzn, nadciśnienie tętnicze 30,31% kobiet i 41,71% mężczyzn, cukrzycę 3,46 % kobiet i 8,57% mężczyzn. W populacji kobiet średnio stężenie cholesterolu całkowitego wynosiło  $208.79 \pm 33,4$  mg%, a w populacji mężczyzn  $205,27 \pm 32,11$ mg% ( $P = 0,29$ ). W populacji kobiet średnie stężenie LDL wynosiło  $122.65 \pm 29,61$  mg%, a w populacji mężczyzn  $119,84 \pm 28,48$  mg%, ( $P = 0.35$ ). Nadciśnienie tętnicze istotnie częściej występowało u mężczyzn 60,42% w porównaniu z kobietami 51,39%. Nalóg palenia papierosów występował istotnie częściej u mężczyzn (41,84%) w porównaniu z kobietami (28,3%). Otyłość obserwowano istotnie częściej u mężczyzn (M – 33,85%, K – 25,4%). podobnie nadwagę (K – 37,88%, M – 44,10%). Dokonano stratyfikacji ryzyka wieńcowe wg kryteriów PTK. Bardzo duże ryzyko epizodu choroby niedokrwiennej serca miało 15,33% kobiet i 37,56% mężczyzn ( $P = 0,05$ ). Ryzyko duże występowało u 17,39% kobiet i u 32,99% mężczyzn ( $P = 0,05$ ). Analizowano udział poszczególnych czynników ryzyka w grupach największego ryzyka. W grupie dużego i bardzo dużego ryzyka zaburzenia lipidowe dotyczyły ponad  $\frac{1}{4}$  badanych (LDL > 100 mg% występuje u K – 85,09%, M – 75,57%), podobnie często obserwowano nadwagę, otyłość (K – 74,11%, M – 78,43) i nadciśnienie tętnicze (K – 74,14% M – 70,15%). Znaczna część osób z grupy wysokiego i bardzo wysokiego ryzyka to nalogowi palacze papierosów (K – 53,86%, M – 58,67%). Rozpowszechnienie czynników ryzyka choroby niedokrwiennej serca w badanej populacji kobiet i mężczyzn między 45 i 60 rokiem życia było bardzo podobne jak w wielu badaniach populacyjnych. Obserwowano większe rozpowszechnienie czynników ryzyka w populacji mężczyzn w porównaniu z populacją kobiet.