of the coronary arteries, and alcohol drinking with secondary lesions of the aorta. The association of personal factors with atherosclerosis of the coronary arteries appeared to be significant in women, but not in men.

FREQUENCY OF CORONARY AND PERIPHERAL ARTERY DISEASE IN HYPERLIPOPROTEINEMIA

A Cooperative Study Among Italian Lipid Clinics*

G. Crepaldi

Recent reports show that during the past 20 years mortality resulting from cardiovascular disease (CVD) has been increasing steadily in Italy as in the rest of the industrialized world (Crepaldi et al., 1976).

The statistics on general mortality in Italy show that the number of deaths from CVD rose from 36/10,000/year in 1951 to 45/10,000/year in 1972. For coronary artery disease (CAD), the data show mortality rising from 4/10,000/year in 1952 to 16/10,000/year in 1971.

According to national statistics, the frequency of CVD in the Italian hospital population was 7/1000 in 1961 as compared with 14/1000 in 1971.

More reliable data concerning CAD incidence has been provided recently by Menotti's epidemiological study (Italy) as part of the "Seven Country Study" (Keys, 1970). In the two small towns studied by Menotti et al. (unpublished observations, 1976), CAD incidence was about 10/100/year among men, practically the same as the incidence reported for men in the United States.

The Framingham (Kannel et al., 1971) and "Seven Country" (Keys, 1970) studies concluded that the differences in CAD incidence relate to differences in serum cholesterol levels. Dietary surveys (Stamler, 1967) indicate that differences in cholesterol concentrations may relate to diet — and more specifically to percent intake of saturated fat.

Mean cholesterol levels were studied in three population samples (age range 20–60 years) by three lipid clinics in Italy (Bologna, Rome, and Naples). The highest levels, for both cholesterol and triglycerides, were observed by the northern clinic (Bologna), whereas the lowest levels were reported by the southern clinic (Naples). Dietary surveys of the populations of those areas revealed a strict relationship between the degree of hyperlipidemia and total calorie and saturated fat intake.

*Italian Lipid Clinics:
- Naples: M. Mancini, P. Oriente
- Padua: R. Fellin, G. Briani, E. Manzato
- Palermo: S. Strano, G. Avellone, A. D’Eredità
- Perugia: S. Ventura, U. Senin
- Rome: G. Ricci, A. Menotti
- Siena: G. Weber, E. Bertelli
- Venice: P. Avogaro, C. Cazzolato
- Verona: C. Dal Palù, A. Pagnan.

With the collaboration of the Institute of Genetics (Bologna), S. Cavicchi, D. Conti, and the Institute of Mathematics (Modena), G. Mannino.
Prevalence of Hyperlipidemias

The risk of premature CAD — at least among men — rises directly as serum cholesterol levels rise. This relationship is particularly evident in patients in whom the serum cholesterol level is high because of familial hyperbetalipoproteinemia (type II), although studies of such subjects reveal considerable variation in the incidence of CAD (Jensen et al., 1967; Patrassi and Crepaldi, 1971; Slack, 1969; Stone et al., 1974). An increased risk of CAD and peripheral artery disease (PAD) has been observed in patients with Fredrickson’s type III and IV hyperlipidemias (Patrassi and Crepaldi, 1971).

A series of patients affected with different types of hyperlipoproteinemia have been studied by ten lipid clinics in Italy (Table 1). A total of 3359 subjects — 2010 men and 1349 women — were examined. Of those patients 43.7% were affected with type IIa, 22.9% with type IIb, 30.4% with type IV, 2.4% with type V, and fewer than 1% with type III. Only three patients (observed at the Padua Clinic) were affected with type I. All of the lipid clinics used the World Health Organization's "classification of hyperlipidemias and hyperlipoproteinemias" (WHO, 1972) as the basis for lipid typing.

Despite the homogeneous distribution of the patients observed by the ten lipid clinics, the incidence of specific types of hyperlipoproteinemias varied greatly; for example, in the Milan, Palermo, and Siena populations type IV exceeded 40% (Table 2). At the same time, the lowest percentage of type IV and the highest of type IIa were noted in the Roman population.

More men than women and more northerners than southerners were examined in this country-wide survey. Although type IIa was more prevalent among women, type IV was more frequently observed among men (Table 3). This finding was true for both northern and southern Italy.

Our results were confirmed by the retrospective study carried out in Brisighella (Italy) (Lenzi, S., Descovich, G., unpublished data, 1976). That study showed that the women of that small Italian town were prevalently hypercholesterolemic, whereas the males were prevalently hypertriglyceridemic, when 260 mg/dl was used as the cut-off point for the normal cholesterol level and 190 mg/dl that for the normal triglyceride level.

For men, age was significantly correlated with the type of hyperlipoproteinemia. This finding was confirmed by the fact that the greatest number of men classified as having type IIa and type IIb hyperlipoproteinemias were in the age range between 50 and 54 years, whereas those having type IV and V were mostly between 45 and 49 years.

Moreover, for each type of hyperlipoproteinemia, the number of men was greater for the early decades of life, but the number of women was greater for the latter decades.

Table 1. Primary hyperlipoproteinemias total No. 3359 (M = 2010; F = 1349) (Lipid clinic cooperative study, Italy)

<table>
<thead>
<tr>
<th>Type</th>
<th>Males</th>
<th>Females</th>
<th>All</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0.06%</td>
</tr>
<tr>
<td>IIa</td>
<td>645</td>
<td>823</td>
<td>1468</td>
<td>43.70%</td>
</tr>
<tr>
<td>IIb</td>
<td>484</td>
<td>284</td>
<td>768</td>
<td>22.90%</td>
</tr>
<tr>
<td>III</td>
<td>11</td>
<td>9</td>
<td>20</td>
<td>0.60%</td>
</tr>
<tr>
<td>IV</td>
<td>800</td>
<td>221</td>
<td>1021</td>
<td>30.40%</td>
</tr>
<tr>
<td>V</td>
<td>69</td>
<td>11</td>
<td>80</td>
<td>2.40%</td>
</tr>
</tbody>
</table>