

Research Article

The Benefit of Nutrition in Coronary Heart Disease

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Abstract:

Coronary heart disease (CHD) is a condition of the coronary arteries that supply the heart. It is a narrowing of one or more coronary arteries. It is caused by atherosclerosis which is due to the action of fatty deposits of cholesterol. When blood flow is slowed by a blocked artery, the myocardium is no longer properly oxygenated. Coronary heart disease represents a major socio-economic challenge. In addition to genetics, the main risk factors for coronary heart disease are lack of physical activity, smoking, alcohol abuse and poor diet. The mortality rate linked to CD in the world and in Algeria is 34%. Our study involved 40 patients taken at random. It was carried out by collecting biological, clinical and anthropometric data collected during consultations. Our objective was to show the benefit of diet in the prevention of modifiable risk factors (hypertension, diabetes, dyslipidemia, obesity, sedentary lifestyle, smoking and alcohol) and compare our results with those found in the literature.

Keywords: coronary heart disease, nutrition, dietetics, risk factors, atherosclerosis, BMI, DET, AEJ, Mediterranean diet.

Introduction:

Coronary heart disease (CHD) is the cardiovascular disease which represents the leading cause of mortality in Algeria and in the world with a rate of 34% per year according to figures from the National Institute of Public Health (INSP, 2021)[1]. This is a disease that affects one or more coronary arteries whose function is to irrigate the heart; it is the consequence of atherosclerosis which leads to the hardening of the arteries and the slowing of the blood preventing the passage of oxygen to the myocardial cells (myocardial ischemia)(HAS, 2007)[2]. It involves several risk factors: non-modifiable factors such as age, sex and genetic factors; and those that we can modify such as diabetes, high blood pressure (hypertension), dyslipidemia, obesity, sedentary lifestyle, tobacco and excessive alcohol consumption (LIHIQUI et al. 2007)[3]. It leads to serious complications: unstable angina, myocardial infarction (MI) and heart attack NOUYRIGAT.N,2021[4],Ranya Net al., 2022) [5]. Diet plays a key role in this pathology (BEDARD.A 2010)[6] (REES et al., 2019)[7]. It can be protective when balanced (Mediterranean diet)AMIOT-CARLIN.M. J,2019[8]because it is rich in vitamins (vitamin B, C) and minerals (magnesium; calcium); fatty acids (FA) (omega-3); dietary fiber and protein BLAIS.C,2019)[9]. On the other hand, it is harmful when it is rich in saturated fatty acids (FA), trans fatty acids (TFA), salt and carbohydrates. (AZZOUG et al., 2019)[10]. Physical activity (PA) also plays a role in the prevention of coronary heart disease. It is a moderate activity that requires no more than 30 minutes of brisk walking per day (OPPERT, 2004)[11]. The objective of our study is to determine the benefit of diet in this pathology to prevent the appearance of modifiable risk factors such as diabetes, hypertension, obesity (ANDRELLI.F, O2010)[12], tobacco, sedentary lifestyle) and compare our results with those found in the literature

Materials and methods

This is a retrospective cross-sectional study carried out on 40 randomly selected patients. Patients suffering from valvular heart disease, aortic dissection or pericarditis or others were excluded from our study. Clinical data were collected from a questionnaire-based interview. The information collected is: (age, sex, height, weight, family history), and search for risk factors (hypertension, diabetes, dyslipidemia, smoking, sedentary lifestyle). The biological parameters retained (HbA1c, TG level, HDL-C level, LDL-C level). Were retrieved from patients' medical records. □ The anthropometric data are the height and weight which made it possible to measure the body mass index (BMI). The dietary data made it possible to evaluate energy needs: We calculated the total energy expenditure (DET) for each patient. carried out a dietary survey with the aim of knowing eating habits and calculating daily energy intake (AEJ) from the CIQUAL table.

Statistical analysis: carried out using correlation and Student tests with a degree of significance ($p < 0.05$)

Résultats:

The majority of our patients were male; 65% men 35% women. The average age of 62.8 ± 10.22 years and with extremes of 38 to 80 years. 40% of patients had a history of risk factors for first-degree relatives (hypertension, diabetes and CD

The average BMI was $28 \pm 5.1 \text{ kg/m}^2$

58% of patients were diabetic with HbA1c levels above normal (6.5%).

68% of our patients were sedentary (27 patients)

LDL-c levels higher than normal ($>1.6 \text{ g/l}$) were found in only 3 patients as for low HDL ($<0.4 \text{ g/l}$), it was found in more than half of the patients (53 %). 19 patients (48%) had elevated triglycerides (TG)

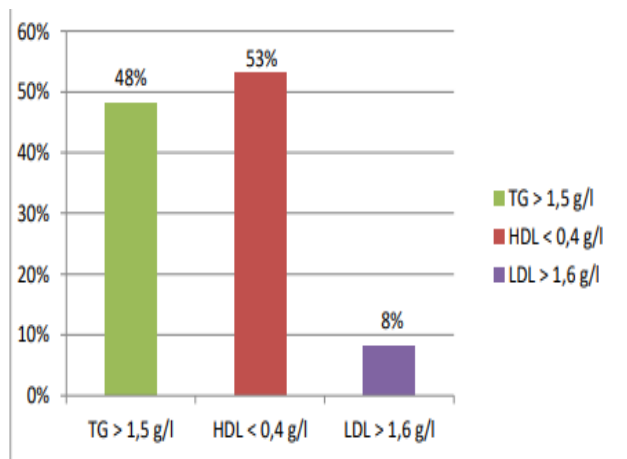


Figure 16 : Répartition des patients selon la dyslipidémie

our results found 19 patients smoking for 15 years (73%) and the majority were sedentary the daily energy expenditure (DEJ) was 2636.23 ± 649.9Kcal and the average of their daily energy intake (AEJ) is 3002.71 ± 825.9Kcal. Our results show that the average of AEJ is higher than the average of DEJ

The comparison of the quantitative variables of our results was carried out with the correlation test: and a probability of $P < 0.05$ was considered significant. Our results were all non-significant except obesity and smoking The comparison between DET and AEJ of our results was carried out with the Student t test and a probability of $P < 0.05$ was considered significant and our result ($P = 0.03 < 0.05$) was significant.

Discussion:

1/ Age: constitutes a non-modifiable risk factor; 67.5% of our patients were aged between 59-80 years and our results are in agreement with those found in the literature of (MONICA, 2006)[13]. This means that the risk of CD increases with age. 2/ Gender: we noted a male predominance of 65% compared to 35% of women. The results found are in agreement with those of (MERGHIT et al., 2021)[14] and contradictory with those of (FOURATI, 2004)[15]. 3/ Familial ATD: we found 48% of our patients having familial ATD; this is contradictory with the study of MERGHIT et al., 2021)[14] and contradictory with those of (FOURATI, 2004)[15]. Among the modifiable FDRs: 68% of subjects were hypertensive. The correlation test was carried out between AET and HTA ($P = 0.72$, $R = 0.05$) which is statistically insignificant. Our results are in agreement with those of (MERGHIT et al., 2021)[14]; and contradictory to those of (PESSINABA, 2013)[16]. This can justify the predominance of fast food and processed food which is high in salt in recent decades and trans fats. 58% of patients were diabetic. A correlation test was carried out between the AET and hypertension ($P=0.84$, $R=0.03$) which is statistically insignificant. Our results are in contradiction with those of (MERGHIT et al., 2021 [14]; PESSINABA, 2013)[16]. This may be linked to the lifestyle of our patients: sedentary lifestyle and a diet rich in carbohydrates with a high glycemic index.

53% of patients had lowered HDL-c, 8% had elevated LDL-c, and 48% had hypertriglyceridemia. The p-values for the correlation of all variables (AET-TG, AET-LDL, and AET-HDL are respectively ($P=$; 0.42; $P=0.57$ and $P=0.28$), ($R=0.12$,

$R=0.17$, $R=0.09$) which are all above the significance threshold of 0.05, therefore they are all statistically insignificant. What we can conclude that hypertriglyceridemia is a clear FDR of CD, these results are found in the study of: MERGHIT et al., 2021[14]. The low HDL-c level remains a atherogenic factor of CD despite a normal LDL-c level, (IFARNIER,2008[17],DUBREUIL.E[18],[19]SCHEEN.A.J,“INTERHEART”

A correlation test was carried out between AET and obesity ($P = 0.004$, $R = 0.51$) which is statistically significant. Our results are in agreement with those of (MERGHIT et al., 2021) [14]

5/ 73% of patients were smokers vs 27% were non-smokers (significant difference $P<0.05$). Our results were found in the literature of (PESSINABA, 2013[16]; GASTON.C.)[20]. A correlation test was carried out between AET and hypertension ($P = 0.02$, $R = 0.35$) which is statistically significant. Tobacco is therefore an undeniable risk factor for CD, its consumption promotes the increase in the degradation of NO which has a myocardial and vascular cytotoxic action, it aggravates the effect of LDL oxidation and LDL infiltration. oxidized by increasing the level of total cholesterol. MESSNER.B,[21] 68% of our patients were sedentary, the statistical tests are not significant since ($P = 0.06$, $R = 0.29$). This can be explained by the limited number used in our statistical study; and yet our results are in agreement with those of (MERGHIT et al, 2021[14] ; PESSINABA, 2013[16],AMIOT-CARLIN.M.J,2019[8] ; MCEVOY,2014[22] ; OPPERT.J.M,2004)[11].

Conclusion:


At the end of our work and in the light of our results we can say that coronary heart disease is clearly increasing in our country and in the world, it is directly linked to the lack of physical activity and a poor quality diet adopted by the majority of people. This type of behavior causes an explosion of metabolic diseases (hypertension, diabetes, dyslipidemia); the only treatment for this pathology remains secondary prevention of modifiable risk factors (CHIRONI.G, 2010)[23]. this prevention requires a balanced diet of good quality such as the Mediterranean diet (POIRIER, 2019)[24], the quality of which is no longer to be demonstrated, and moderate-intensity physical activity.

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