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Research Article

New evidence about personality traits and risk of new complications in patients with coronary artery disease. A study by a hypnotic-derived personality classification

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Abstract

Five-hundred outpatients with established coronary artery disease underwent to the "analogic personality test" aiming to discriminate the bipolar subpopulation accordingly to the indication of Analogical Disciplines Italian School. Hundred-thirteen bipolar patients (Group 1) were identified and compared to the remaining three hundred-eighty seven patients during a two years clinical follow-up in order to detect possible differences in cardiac death, myocardial infarction, Cerebrovascular Accidents (CVA), re-PCI rate. Significant statistical differences were encountered for each one of the considered events but CVA while ANOVA revealed bipolar personality, diabetes, age, left ventricular ejection fraction <35% and heart failure as significant predictive variables for cardiovascular events. Bipolarism represents a new risk factor for new events in patients with established coronary artery disease.

Introduction

Personality Traits (PTs) are broad dimensions of individual differences between people that relate to the way in which they engage with the social world. PTs underpin the consistency with which people think, act and feel across different situations and over time. Adult PTs are thought to derive from early life differences in temperament shaped by exposure to social experiences and/or genetic features [1]. In the past, PTs have been investigated as possible risk factors for the development of Coronary Artery Disease (CAD) and other cardiac or metabolic issues [2-10]. Despite contradictory results, however the so-called type A personality showed in numerous studies a significant association with CAD [2-10].

Nonetheless, there is no trace in scientific literature of evidence about the possible association between PTs and development of complication rate in patients with established CAD.

Recent progress in the field of hypnosis [11,12] allowed to develop a new classification of personality types, depending on the unconscious decoding of family conflicts. Among the sixteen provided types, a particular focus may be reserved to the so-called "ego-bipolar", who express a simultaneous unconscious verso-anti-verso reaction against the same parental figure or symbolism. These individuals typically move through a continuous trend to ride emotional conflicts in order to compensate their deep antinomic necessities. This may translate into a high level of reaction to daily stressors that might relate to a chronic activation of the Sympathetic Nervous System (SNS).

The hypothesis of this study is that bipolar personality, following Benemeglio's definition, may relate to higher incidence of cardio-vascular complication and recurrences in patients with CAD.

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Methods

Prospective data were collected from the clinical files of the outpatient clinics of two Italian Cardiology Hospitals.

500 consecutive outpatients with CAD (387 men and 113 women, mean age 66±22 years) underwent the so-called "analogic personality test" (APT) [11,12] to discriminate the bipolar sub-population (Table 1). These patients resulted from a first group of 589 where 89 were lost at follow up. The resulting population of 500 received a complete 2 year clinical follow up. Clinical data were collected by a different operator who was not aware about the results of the APT. Furthermore, APT results were obtained by an expert operator following the directions of the Italian School of Analogical Disciplines.

APT

APT bases on ideo-motor movements that automatically develop under the stimulus of stressor symbolisms that relate to the triadic components of Ego, Father and Mother. These symbolisms are respectively the Circle, the Beam and the Triangle. They may be presented to the patients by appropriate hands configurations or by direct visualization. The unconscious verso/anti-verso reaction translates into a binary anterograde or retrograde spontaneous and instinctual body oscillation. From the different possible 16 combinations, special care was taken to select "bipolar" individuals.

This approach comes from the long-standing work of the Italian experience by the "Università Popolare Stefano Benemeglio", which has been validated over 50 years of clinical activity. This test is highly reliable with an inter-individual variability of less than 1% (unpublished data).

Clinical and epidemiological factors of the two groups of patients (family history for CAD, active smoking, dyslipidemia, diabetes, hypertension, statin therapy, beta-blockers therapy, previous PCI, previous CABG , left ventricular EF) are shown in Table 2.

Follow up

Group 1 and Group 2 received a 2-year clinical follow-up in order to detect possible differences in cardio-vascular complication rate. The following events were considered cardio-vascular complications: cardiac death, MI, Cerebrovascular Accidents (CVA), re-PCI in PCI patients.

Statistical analysis

Continuous data were expressed as mean ± standard deviation, and categorical data as proportions (%). Comparisons of clinical characteristics of patients were performed using the Student's t-test. Furthermore, the categorical variables were compared using the chi-square test. A one-way ANOVA for independent groups was conducted to compare the effect of personality on cardiovascular outcomes. All analyses were based on the use of SPSS software, Version 18.0 (SPSS Inc. Chicago, IL, USA). Values of $p<0.05$ were regarded as statistically significant, after calculating the statyscl power of the population following standard methods. A multivariable Cox regression model was created with the use of patients' characteristics in order to identify independent predictors of cardiovascular complication as a composite of cardiac death, new MI, and re-PCI in PCI patients. Relative risks were expressed as Hazard Ratio (HR).

Table 1: Patients epidemiology.

	Group 2	p	Group 1 (bipolars)
N	387		113
m/f ratio	1,46	NS	1,62
Mean age (years)	64±17	NS	67±26
Myocardial infarction (n, %)	204 (52, 7%)	NS	58 (51,3%)
Stable angina (n, %)	80 (20, 6%)	P<0,1	13 (11, 5%)
Unstable angina (n, %)	25 (6, 4%)	NS	9 (7, 9%)
Poisitive ischemic test (n, %)	18 (4, 6%)	NS	10 (8,8%)
PCI (n, %)	200 (51,6%)	NS	55 (48, 6%)

N: Number; PCI: Percutaneous Coronary Interventions

Table 2: Clinical differences between populations.

	Group 1	Group 2 (bipolars)	P
n.	387	113	
Age	64±17	67±26	NS
m/f ratio	1,46	1,6	
Diabetes (n, %)	178 (46, 0%)	57 (50, 4%)	NS
Hypertension (n, %)	110 (28, 4%)	42 (37, 1%)	NS
Dyslipidemia (n, %)	144 (37, 2%)	50 (44, 2%)	P<0,5
active smoking (n, %)	88 (22, 7%)	30 (26, 5%)	NS
family history of CAD (n, %)	172 (44, 4%)	49 (43, 3%)	NS
statin therapy (n, %)	290 (74, 9%)	79 (69, 9%)	NS
beta blocker ther. (n, %)	297 (76, 7%)	86 (76, 1%)	NS
PCI (n, %)	200 (51, 6%)	55 (48, 6%)	NS
previous MI (n, %)	204 (52, 7%)	58 (51, 3%)	NS
LVEF < 35% (n, %)	100 (25,8%)	32 (28,3%)	NS

N: Number; CAD: Coronart Artery Disease; PCI: Percutaneous Coronary Interventions; MI: Myocardial Infarction; LVEF: Left Ventricular Ejection Fraction; NS: Non Significant

Results

Among 500 patients, 113 resulted bipolar (70 men and 43 females, mean age 67±26 years). 58 patients (51.3%) had previously suffered an acute Myocardial Infarction (MI) and 32 (28.3%) complained of stable angina [13], unstable angina [9], positive ischemic stress test [10].

55 patients (48.6%) had previously undergone Percutaneous Coronary Interventions (PCI).

This group of patients (Group 1) was matched to the remaining 387 non-bipolar patients (Group 2, 327 men and 60 women, mean age 64± 17 years). Within Group 2, 204 (52.7%) patients had a previous MI, while the remaining 123 (31.7%) complained of stable angina (80), unstable angina [25] and positive ischemic stress test [18]. PCI had been performed in 200 (51.6%) patients (Table 1).

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Significant statistical differences were encountered for each one of the considered complications but CVA at 2 years follow up, while no significant difference was met at 1 year (Figure 1).

Two-years death was 9% in Group 2 vs 2.8% in group 1 ($p<0.001$), MI was 24.8% in Group 2 vs 12.4% in group 1 ($p<0.01$), cerebrovascular accidents were 7.0% in Group 2 vs 6.7% in Group 1 (NS), re-PCI was done in 25% of Group 2 vs 13.5% of Group 1 ($p<0.01$) (Table 3).

MI was related to PCI complications only in 4% of cases in Group 2 vs 5% of cases in Group 1 (non significant).

Univariate analyses showed that diabetes mellitus (hazard ratio [HR] = 2.32), LVEF < 35 % (HR = 2.04), symptoms of heart failure (HR = 1.67) and age (HR = 1.03) were significantly associated with death and the composite of death, new MI and re-PCI.

Multivariate analysis (Table 4) revealed bipolar personality (HR = 2.64), diabetes (HR = 2.5), LVEF < 35 % (HR = 1.84), symptoms of heart failure (HR = 1.7) and age (HR = 1.2) were independent predictors of the composite of mortality, new MI, and re-PCI in PCI patients (Table 4).

A further analysis was done between bipolar patients, considering their belonging to the group of "ego-masculine" (n = 60, 40 males and 20 females) and "ego-feminine" (53 patients, 30 males, 23 females), to show any possible difference between these subgroups as a risk factor of cardiovascular events. No significant difference was found between the two sub-groups (Table 3).

Discussion

Through the years, the relative contribution of personality features to the cardiovascular risk has been widely discussed. However, there are no data in literature that take into consideration the hypothesis that peculiar personality types are related to the risk of new complication in cardiovascular patients. This study reports a 2-year follow up of CAD patients after detecting their personality type.

There have been many taxonomies of personality traits, but research over the past 20 years has focused on five broad personality dimensions, each of which accommodates a number of lower–order traits [1-10], such as: 1. extraversion or positive emotionality (incorporating traits such as sociability, energy, shyness and dominance/subordination); 2. neuroticism or negative emotionality (including lower-order traits such as proneness to anxiety, irritability, sadness, insecurity and guilt); 3. conscientiousness (factors such as reliability, carefulness, persistence and self-control); 4. agreeableness (cooperativeness, consideration, generosity, kindness and politeness); and 5. openness to experience (imaginativeness, insight and aesthetic sensitivity). Individuals vary on all these dispositions, so each person may have a particular combination of trait strengths. Personality traits predict a range of outcomes with moderate consistency, including quality of social and family relationships, marital status and satisfaction, occupational choices, political attitudes and criminality [2]. The role of personality in Coronary Heart Disease (CHD) first came to prominence with the concept of type A behavior, a compound of hostility, impatience, competitiveness and dominance and has been widely discussed during the following years [3-10]. The Type A Behavior Pattern (TABP) was described in the 1950s by cardiologists Meyer Friedman and Ray Rosenman. Their

Table 3: Results after 2 years follow up and differences between Ego F and Ego M.

	Group 2	P	Group 1
Death (n, %)	11 (2,8%)	P<0,001	8 (9,0%)
MI	96 (24,8%)	P<0,01	11 (12,4%)
CVA	27 (7,0%)	NS	6 (6,7%)
Re-PCI	96 (24,8%)	P<0,01	12 (13,5%)
	egoM bipolars (n=60)		egoF bipolars (n=53)
Death (n, %)	5 (3,0%)	NS	4 (2,1%)
new MI (n, %)	14 (8,4%)	NS	14 (7,4%)
CVA (n, %)	4 (2,4%)	NS	4 (2,1%)
Re-PCI (n, %)	12 (7,2%)	NS	16 (8,4%)

MI: Myocardial Infarction; CVA: Cardiovascular Accidents; PCI: Percutaneous Coronary Interventions; NS: Non Significant

Table 4: ANOVA.

Predictors	HR
Bipolarism	2.64
Age	2.5
Diabetes	2.5
Lvef < 35%	1.84
Heart Failure	1.7
Betablockers Therapy	0.9
Statin Therapy	0.9
Angina Pectoris	0.82
Dyslipidemia	0.80
Pci	0.7
Hypertension	0.7
Family History of Cad	0.64
Active Smoking	0.6

HR: Hazard Ratio; LVEF: Left Ventricular Ejection Fraction; PCI: Percutaneous Coronary Interventions

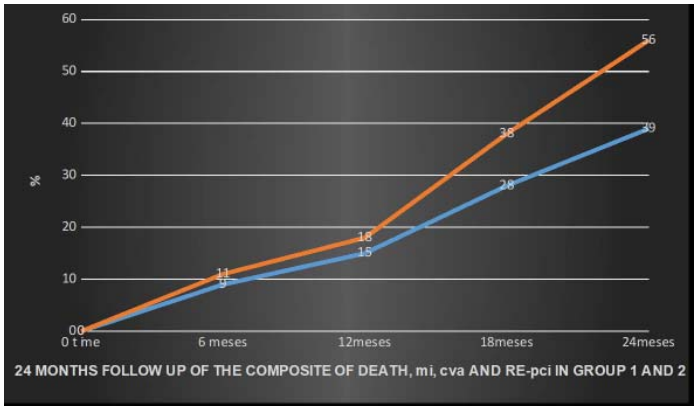

Figure 1: MI: Myocardial Infarction; CVA: Cardiovascular accidents; PCI: Percutaneous Coronary Interventions

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observation of its relation to the development of CHD was supported by positive findings from the Western Collaborative Group Study and the Framingham Study [12-14].

The Western Collaborative Group Study is a prospective study of 3,154 employed men aged 39 to 59 years. Ischemic heart disease occurred in 257 subjects during 8.5 years of follow-up. Risk of CHD was studied with use of the multiple logistic risk model. The incidence of CHD had a highly significant association with serum cholesterol level, behavior pattern, cigarette smoking and systolic blood pressure in younger (39 to 49 years) and older (50 to 59 years) men and also with age and corneal arcus in the younger group. Type A behavior pattern was strongly related to the incidence of coronary disease in both age groups, independent of interrelations of behavior patterns with any other risk factor.

However, in other studies the strongest evidence has emerged for depression, which seems to be both an independent predictor of future CAD and a determinant of morbidity, adaptation and quality of life after an acute coronary syndrome and coronary artery bypass surgery [15]. Denollet [16], formulated the concept of type D personality, or the distressed personality type, in response to the findings that depression and low perceived social support relate to cardiovascular morbidity and mortality. He proposed a personality type that might predispose people to depression and social isolation by combining two personality traits, namely negative affectivity (the tendency to experience negative emotions) and social inhibition, or the tendency to inhibit self-expression in social interactions. There has been vigorous debate among psychosocial researchers about the validity and usefulness of the type D construct. One issue is whether it adds to the better-established evidence concerning depression, since the negative affectivity component of type D strongly overlaps with depression. The second question is whether type D is really a stable personality type rather than a response to illness, since, in most studies, it is assessed in patients with established CAD.

A recent study [17], by Voxel-Based Morphometry (VBM) and resting-state Functional Connectivity (rsFC) analysis examined the neural correlates of TABP. The results showed that TABP was positively correlated with regional Gray Matter Volume (rGMV) in the left subgenual Anterior Cingulate Cortex (sgACC), which might reflect immature functioning of this region related to impatience. In addition, TABP was positively correlated with the strength of rsFC between the left ventral striatum and areas in the left ventromedial Prefrontal Cortex (vmPFC) and the right rostral Anterior Cingulate Cortex (rACC). These regions are associated with achievement striving related to impatience, aggressiveness, and worry under time pressure. In this study, the combination of morphometric results (increased rGMV of the left sgACC) and functional connectivity findings (increased rsFC between the left ventral caudate and the left vmPFC/right rACC in the fronto-striatal network) may provide a valuable basis for a comprehensive understanding of the neural circuitry underlying individual differences in TABP.

The importance of this study is related to the demonstration of specific neurologic modification that can describe the functional organization of type A personality. Furthermore, as these areas are related to aggressiveness, it may be hypothesized they may concur to a chronic activation of sympathetic system.

Human anterior cingulate function has been explained primarily within a cognitive framework. A recent study [18], used functional MRI experiments with simultaneous electrocardiography to examine regional brain activity associated with autonomic cardiovascular control during performance of cognitive and motor tasks. Using indices of heart rate variability, and high and low-frequency power in the cardiac rhythm, researchers observed activity in the dorsal anterior cingulate cortex related to sympathetic modulation of heart rate that was dissociable from cognitive and motor-related activity. The findings predict that during effortful cognitive and motor behavior the dorsal Anterior Cingulate Cortex (ACC) supports the generation of associated autonomic states of cardiovascular arousal. This prediction was further confirmed by studying three patients with focal damage involving the ACC while they performed effortful cognitive and motor tests. Each showed abnormalities in autonomic cardiovascular responses with blunted autonomic arousal to mental stress when compared with 147 normal subjects tested in identical fashion. Thus, converging neuroimaging and clinical findings suggest that ACC function mediates context-driven modulation of bodily arousal states. The chronic activation of orto-sympathetic system could be the critical factor to mediate behavioral features to cardiac and coronary problems. Regional sympathetic activity may be studied in humans using electrophysiological methods measuring sympathetic nerve firing rates and neurochemical techniques providing quantification of noradrenaline spillover to plasma from sympathetic nerves in individual organs. In cardiac failure, for example, the sympathetic nerves of the heart are preferentially stimulated. Noradrenaline release from the failing heart at rest in untreated patients is increased as much as 50-fold, similar to the level seen in the healthy heart during near-maximal exercise. This adrenergic support to the failing heart costs progressive myocardial deterioration. Various previous studies have confirmed this hypothesis, measuring the urinary excretion or blood levels of catecholamines or their metabolites [19-25]. The significance of chronic sympathetic activation in inducing cardiovascular damage has been confirmed from many clinical and experimental evidences and translated into the wide use of beta blocker therapy in cardiac, CAD or hypertensive patients [19-28]. As for the influence of personality traits over the development and complication of CAD, no more than 50% of clinical CHD is explicable in terms of classical cardiac risk factors. Starting from this evidence, the individuation of a particular group of individuals whom develop an unconscious trend to conflict may be an important starting point to further relate personality changes to the tendency to develop further coronary complication in the group of CAD patients. There are also scientific evidences on the influence of orto-sympathetic activation or personality A type on different aspects of the lipidic and hormonal profile [29-36]. These factors could represent another significant clinical data linking personality traits and rate of complication in CAD patients.

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The possibility to accurately and objectively define the presence of this particular personality type (bipolarism) by a simple analogic test may represent an important step forward to assess the presence of a new "risk factor" in CAD patients. Potentially, this factor might be modified through the intervention of restructuration by hypnosis in order to improve the cardiac outcome. PAT represents the link between the operator and the profound emotional conflict of patients coming from initial life experiences as related to the paternal and maternal figures. Presentation of specific symbolisms may connect to regressive states in order to reveal and characterize the unconscious process of personality development. This test has been widely validated by the work of Stefano Benemeglio and his collaborators during 50 years of intense activity where they were able to establish the foundation of "Analogic Psychology and Philosophy". Unpublished data show an inter and intra-individual variability less than 1%.

Bipolar personality is characterized by a "verso-antiverso" response to the same symbolism revealing an opposite reaction to the influence of the same parental conflict. This arrangement of personality implicates a chronic development of unsolved conflicts and the impossibility to mediate among different energetic challenges of every-day life. Therefore, these subjects live a never-ending oscillation between opposite poles of the same unconscious reactivity, a good definition of chronic stress. Chronic stress may represent the link between bipolar personality and trend to increase to new complications in coronary artery disease patients. Medical therapy bases on the use of sympathetic blockers in order to decrease the influence of neuro-vegetative tone over the heart and the coronary arteries. However, a significant decrease of neurovegetative influence might be obtained through hypnotic restructuration in bipolar patients with CAD to modify their implicit trend to new complications.

Perspective studies may be needed in order to assess the relation between bipolarism, NMR findings, sympathetic activation and metabolic asset in these patients.

Limitations of the study

In this study the strong statistical evidence about the influence of bipolarism over the risk of new cardiac events in a group of patients with CAD is not corroborated by a further analysis of factors that might represent the link between personality trait and risk itself. In particular, in spite of the prospective nature of the study, neither instrumental evaluation of cardiac neurovegetative tone nor a metabolic assessment of the two groups of patients were done. Future studies are needed to establish the influence of bipolarism over the biologic features of patients with CAD and the possibility to modify their possible unfavorable asset through restructuration.

References

1. Caspi A, Roberts BW, Shiner RL (2005) Personality development: stability and change. Annu Rev Psychol 56: 453-484. Link: https://bit.ly/31PizNj

2. Ozer DJ, Benet-Martinez V (2006) Personality and the prediction of consequential outcomes. Annu Rev Psychol 57: 401-421. Link: https://bit.ly/3h9gEK9

3. Friedman M, Rosenman RH (1960) Overt behavior pattern in coronary disease. Detection of overt behavior pattern A in patients with coronary disease by a new psychophysiological procedure. JAMA 173: 1320-1325. Link: https://bit.ly/3iKIhtn

4. Friedman M, Rosenman RH (1959) Association of specific overt behavior pattern with blood and cardiovascular findings; blood cholesterol level, blood clotting time, incidence of arcus senilis, and clinical coronary artery disease. JAMA 169: 1286-1296. Link: https://bit.ly/2E1hkCA

5. Grundy SM, Griffin AC (1959) Effects of periodic mental stress on serum cholesterol levels. Circulation 19: 496-498. Link: https://bit.ly/30U527M

6. Friedman M, Byers SO, Rosenman RH (1965) Effect of unsaturated fats upon lipemia and conjunctival circulation. A study of coronary-prone (pattern A) men. JAMA 193: 882-886. Link: https://bit.ly/3kLPqLu

7. Friedman M, St George S, Byers SO, Rosenman RH (1960) Excretion of catecholamines, 17-ketosteroids, 17-hydroxycorticoids and 5-hydroxyindole in men exhibiting a particular behavior pattern (A) associated with high incidence of clinical coronary artery disease. J Clin Invest 39: 758-764. Link: https://bit.ly/2DUaOxJ

8. Friedman M, Byers SO, Diamant J, Rosenman RH (1975) Plasma catecholamine response of coronary-prone subjects (type A) to a specific challenge. Metabolism 24: 205-210. Link: https://bit.ly/3gYjOA5

9. Rozanski A, Blumenthal JA, Kaplan J (1999) Impact of psychological factors on the pathogenesis of cardiovascular disease and implications for therapy. Circulation 99: 2192-2217. Link: https://bit.ly/3fV9IPk

10. Suls J, Bunde J (2005) Anger, anxiety, and depression as risk factors for cardiovascular disease: the problems and implications of overlapping affective dispositions. Psychol Bull 131: 260-300. Link: https://bit.ly/31P4DTE

11. Benemeglio. Benemeglio S. Il potere del gesto. 2005, Ed. CISU, Milano, Italy.

12. Benemeglio. Il potere del segno. 2005, Ed. CISU, Milano, Italy.

13. Rosenman RH, Brand RJ, Sholtz RI, Friedman M (1976) Multivariate prediction of coronary heart disease during 8.5 year follow-up in the Western Collaborative Group Study. Am J Cardiol 37: 903-910. Link: https://bit.ly/2CurJGu

14. Rosenman RH, Friedman M, Straus R, Jenkins CD, Zyzanski SJ, et al. (1970) Coronary heart disease in the Western Collaborative Group Study. A follow-up experience of 4 and one-half years. J Chronic Dis 23: 173-190. Link: https://bit.ly/3kF1fmZ

15. Rosenman RH, Brand RJ, Jenkins D, Friedman M, Straus R, et al. (1975) Coronary heart disease in Western Collaborative Group Study. Final follow-up experience of 8 1/2 years. JAMA 233: 872-877. Link: https://bit.ly/30SrCOa

16. Steptoe A (2006) Depression and physical illness. Cambridge: Cambridge University Press. Link: https://bit.ly/33WN9XU

17. Denollet J (2005) DS14: standard assessment of negative affectivity, social inhibition, and type D personality. Psychosom Med 67: 89-97. Link: https://bit.ly/2POjeJp

18. Wand Y, Wei D, Li W, Qiu J (2014) Individual differences in brain structure and resting-state functional connectivity associated with type A behavior pattern. 272: 217-228. Link: https://bit.ly/2PQGPZN

19. Critchley HD, Mathias CJ, Josephs O, Doherty JO, Dolan RJ, et al. (2003) Human cingulate cortex and autonomic control: converging neuroimaging and clinical evidence. Brain 126: 2139-2152. Link: https://bit.ly/3iFENrO

20. Bertelsen S (1961) Adrenalin-induced alterations in aortic tissue of rabbits compared with changes in human aortic tissue with age. Acta Pathol Microbiol Scand 53: 335-344. Link: https://bit.ly/3gWxmfz

21. Haft JI (1974) Cardiovascular injury induced by sympathetic catecholamines. Prog Cardiovasc Dis 17: 73-86. Link: https://bit.ly/2E55Cqh

Citation: Roberto B, Leonardo B, Stefano B (2020) New evidence about personality traits and risk of new complications in patients with coronary artery disease. A study by a hypnotic-derived personality classification. J Cardiovasc Med Cardiol 7(3): 249-254.DOI: https://dx.doi.org/10.17352/2455-2976.000147

22. Carruthers ME (1969) Aggression and atheroma. Lancet 2: 1170-1171. Link: https://bit.ly/30W6zu0

23. Friedman M, Rosenman RH, St George S (1969) Adrenal response to excess corticotropin in coronary-prone men. Proc Soc Exp Biol Med 131: 1305-1307. Link: https://bit.ly/3iC34iw

24. Grassi G, Seravalle G, Mancia G (2015) Sympathetic activation in cardiovascular disease: evidence, clinical impact and therapeutic implications. Eur J Clin Invest 45: 1367-1375. Link: https://bit.ly/2CrrFY3

25. Najafi A, Sequeira V, Kuster DW, van der Velden J (2016) Beta-adrenergic receptor signalling and its functional consequences in the diseased heart. Eur J Clin Invest 46: 362-374. Link: https://bit.ly/3anbKGE

26. Grassi G, Serravalle G, Quarti-Trevaro F, Dell'Oro R (2009) Sympathetic activation in congestive heart failure: evidence, consequences and therapeutic implications. Curr Vasc Pharmacol 7: 137-145. Link: https://bit.ly/3h7TgfG

27. Goyal V, Jassal DS, Dhalla NS (2016) Pathophysiology and prevention of sudden cardiac death. Can J Physiol Pharmacol 94: 237-244. Link: https://bit.ly/3apW5qg

28. Esler M, Kaye D (2000) Sympathetic nervous system activation in essential hypertension, cardiac failure and psychosomatic heart disease. J Cardiovasc Pharmacol 7: S1-S7. Link: https://bit.ly/2XZKCIQ

29. Remme WJ (1998) The sympathetic nervous system and ischaemic heart disease. Eur Heart J 19: F62-F71. Link: https://bit.ly/3fXdh7A

30. Friedman M, Byers SO, Rosenman RH (1972) Plasma ACTH and cortisol concentration of coronary-prone subjects. Proc Soc Exp Biol Med 140: 681-684. Link: https://bit.ly/2DHvPf5

31. Friedman M, Byers SO, Roseman RH, Elevitch FR (1970) Coronary-prone individuals (type A behavior pattern). Some biochemical characteristics. JAMA 212: 1030-1037. Link: https://bit.ly/2PTstYC

32. Friedman M, Byers SO, Rosenman RH, Neuman R (1971) Coronary-prone individuals (type A behavior pattern). Growth hormone responses. JAMA 217: 929-932. Link: https://bit.ly/3iD3NQA

33. Friedman M, Byers SO, Elek SR (1969) The induction of neurogenic hypercholesteremia. Proc Soc Exp Biol Med 131: 759-762. Link: https://bit.ly/30UW6iE

34. Friedman M, Byers SO, Elek S (1972) Neurogenic hypercholesterolemia. II. Relationship to endocrine function. Am J Physiol 223: 473-479. Link: https://bit.ly/2PPDeeq

35. Byers SO, Friedman M (1973) Neurogenic hypercholesterolemia. 3. Cholesterol synthesis, absorption, and clearance. Am J Physiol 225: 1322-1326. Link: https://bit.ly/3gUBKvq

36. Friedman M, Byers SO, Elek S (1973) The pathogenesis of neurogenic hypercholesterolemia. IV. Abnormal metabolism of chylomicronous cholesterol. Proc Soc Exp Biol Med 142: 359–364. Link: https://bit.ly/3iRydyP

37. Byers SO, Friedman M, Neuman R (1974) Neurogenic hypercholesterolemia: influence upon lipoproteins. Proc Soc Exp Biol Med 145: 442–445. Link: https://bit.ly/3kL6VvJ

Citation: Roberto B, Leonardo B, Stefano B (2020) New evidence about personality traits and risk of new complications in patients with coronary artery disease. A study by a hypnotic-derived personality classification. J Cardiovasc Med Cardiol 7(3): 249-254.DOI: https://dx.doi.org/10.17352/2455-2976.000147