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Juan Ruiz-García,* Santiago Jiménez-Valero, Guillermo Galeote, Ángel Sánchez-Recalde, Sergio García-Blas, and Raúl Moreno

Sección de Hemodinámica y Cardiología Intervencionista, Servicio de Cardiología, Hospital Universitario La Paz, Madrid, Spain

*Corresponding author: Servicio de Cardiología, Hospital Universitario La Paz, P.º de la Castellana 261, 28046 Madrid, Spain. E-mail address: j.ruizgarcia@hotmail.com (J. Ruiz-García).

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Myocardial Infarction in South Asian Immigrants in Catalonia. Results From the ASIAM Study

Infarto de miocardio en inmigrantes del sur de Asia en Cataluña. Resultados del Estudio ASIAM

To the Editor,

In recent years, Catalonia has experienced a considerable increase in immigration from South Asia.¹ This trend has been associated with a rise in hospital admissions for acute myocardial infarction (AMI) in South Asian patients, whose demographic characteristics, risk profile, and the extent of coronary disease seem to differ from that of individuals of European origin.

The aim of our study was to analyze the differences between South Asian and white Spanish patients admitted for a first AMI in a Catalanian reference hospital. This is a retrospective study including all South Asian patients (n=76) and white Spanish patients (n=1253) consecutively hospitalized for a first AMI in our coronary unit between 2002 and 2011. The demographic characteristics of the two groups were compared. South Asian and Spanish patient pairs were then matched for age (± 2 years), sex, and year of presentation (± 2 years), and comparisons were performed for coronary risk factors, clinical presentation, coronary anatomy, and in-hospital clinical course. Because of difficulties in matching South Asians and Spanish patients by age, the ratio ultimately defined was 1:1.6 (76 South Asian patients:127 Spanish patients). Data on the variables studied were obtained from the hospital admission records. Comparisons between the two groups were performed with the chi-square test for categorical variables and the Student *t* test or Mann Whitney *U* test for continuous variables, depending on whether or not they followed a normal distribution.

The majority of patients in the South Asian group were from Pakistan (78.9%), followed by India and Bangladesh (10.5%, respectively). As compared to the white Spanish population, South Asians were younger (47.5 ± 8.7 vs 65.1 ± 12.7 years; $P < .001$) and there was a higher percentage of men (92.1% vs 72.1%; $P < .001$). The prevalence of risk factors, comorbidities, and previous treatments in the two groups is shown in Table 1. The clinical presentation, results of angiography study, treatments, and in-hospital clinical course are summarized in Table 2.

Table 1

Differences in Coronary Risk Factors, Biochemical Parameters, Associated Comorbidity, and Pharmacological Treatment Before Hospitalization Between Age- and Sex-Matched South Asian and White Spanish Patients.

	South Asian (n=76)	White Spanish (n=127)	P
<i>Age and sex after matching</i>			
Age, years	47.5 $\pm$ 8.7	48.6 $\pm$ 8.1	.400
Men	70 (92.1)	117 (92.1)	.792
<i>Coronary risk factors</i>			
Diabetes mellitus	22 (28.9)	25 (19.7)	.180
Hypertension	21 (27.6)	54 (42.5)	.048
Active smoker/ex-smoker	49 (64.5)	106 (83.5)	.002
Smokers, cigarettes/day	20.8 $\pm$ 9.8	26.6 $\pm$ 11.0	.011
Cocaine use	1 (1.3)	12 (9.4)	.034
<i>Biochemical parameters</i>			
Total cholesterol, mg/dL	181 $\pm$ 46.9	196 $\pm$ 46.3	.032
HDL-C, mg/dL	35.5 $\pm$ 8.9	42.3 $\pm$ 10.8	<.001
LDL-C, mg/dL	115 $\pm$ 34.2	124 $\pm$ 38.3	.097
Triglycerides, mg/dL	171 [129–234]	158 [124–233]	.454
HbA _{1c} , %	5.6 [5.0–8.3]	5.2 [4.8–5.8]	.003
<i>Other comorbidities</i>			
Peripheral vasculopathy	1 (1.3)	5 (3.9)	.414
Chronic renal failure	0 (0.0)	4 (3.1)	.299
Thrombophilia	0 (0.0)	1 (0.7)	1.000
HIV infection	0 (0.0)	4 (3.1)	.299
<i>Previous treatments</i>			
ASA	3 (3.9)	6 (4.7)	1.000
Clopidogrel	0 (0.0)	2 (1.6)	.529
Beta blockers	3 (3.9)	10 (7.9)	.378
ACEI/ARB	4 (5.3)	23 (18.1)	.010
Statins	5 (6.5)	31 (24.4)	.001
Insulin/oral lipid lowering drugs	15 (19.7)	11 (8.7)	.039

ACEI, angiotensin-converting enzyme inhibitors; ARB, angiotensin receptor blocker; ASA, acetylsalicylic acid; HbA_{1c}, glycohemoglobin; HDL-C, high-density lipoprotein cholesterol; HIV, human immunodeficiency virus; LDL-C, low-density lipoprotein cholesterol.

Data are expressed as n (%), mean $\pm$ standard deviation, or median [interquartile range].

Table 2

Differences in the Clinical Presentation of Acute Myocardial Infarction, Diagnostic and Therapeutic Procedures Performed, Angiography Results, Pharmacological Treatment During Hospitalization, and In-Hospital Clinical Course Between South Asian and White Spanish Patients Matched for Sex And Age.

	South Asian	White Spanish	P
Clinical presentation			
Patients	76	127	
STEMI	37 (48.7)	77 (60.6)	.130
Anterior STEMI	25 (67.6)	22 (28.6)	<.001
NSTEMI	39 (51.3)	50 (39.4)	.130
Diagnostic and therapeutic procedures			
Patients	76	127	
Time from pain onset to first monitoring, min	138 [53-305]	122 [58-305]	.849
Diagnostic catheterization	71 (93.4)	109 (85.8)	.155
Angioplasty	58 (76.3)	83 (65.3)	.138
Surgical revascularization	6 (7.9)	5 (3.9)	.336
STEMI			
Patients	37	77	
Reperfusion	19 (51.3)	40 (51.9)	.952
Fibrinolysis, n (% reperfused patients)	9 (47.3)	23 (57.5)	.693
Primary angioplasty, n (% reperfused patients)	10 (52.7)	17 (42.5)	.693
Angiography results			
Patients	71	109	
Number of lesions >50% per patient	2.90±1.95	2.23±1.86	.022
Number of lesions >70% per patient	2.20±1.75	1.61±1.26	.016
Number of main vessel lesions >70% per patient	1.63±0.87	1.21±0.83	.002
Patients with common trunk lesion >50%	5 (7.0)	4 (3.7)	.320
Patients with nonrevascularizable coronary disease	4 (5.6)	0 (0.0)	.023
Mean age of nonrevascularizable patients, years	49.3	—	—
Patients with no coronary artery lesions	1 (1.4)	13 (11.8)	.009
Pharmacological treatment during hospitalization			
Patients	76	127	
ASA	76 (100)	126 (99.2)	1.000
Clopidogrel	68 (89.4)	110 (86.6)	.548
Heparin	74 (97.3)	126 (99.2)	.557
Beta blockers	75 (98.7)	118 (92.9)	.094
ACEI/ARB	65 (85.5)	102 (80.3)	.450
Statins	75 (98.7)	126 (99.2)	1.000
In-hospital clinical course			
Patients	76	127	
Reinfarction	2 (2.6)	4 (3.1)	1.000
Postinfarction angina	6 (7.9)	7 (5.5)	.560
VT/VF	2 (2.6)	9 (7.1)	.215
Complete AVB	1 (1.3)	5 (3.9)	.414
Maximum Killip score ≥2	8 (11.3)	11 (8.6)	.730
LVEF at discharge	55.0±11.0	56.0±11.0	.719
In-hospital mortality	1 (1.3)	0 (0.0)	.374

ACEI, angiotensin converting enzyme inhibitors; ARB, angiotensin receptor blocker; ASA, acetylsalicylic acid; AVB, atrioventricular block; LVEF, left ventricular ejection fraction; NSTEMI, non-ST-elevation acute myocardial infarction; STEMI, ST-elevation acute myocardial infarction; VF, ventricular fibrillation; VT, ventricular tachycardia. Data are expressed as n (%), mean± standard deviation, or median [interquartile range].

The analysis of our series showed that South Asians admitted for a first AMI in our setting are a young, mainly male population, with glucose metabolism alterations, and low concentrations of high-density lipoprotein cholesterol. Although the demographic characteristics observed can be explained in part by the phenomenon of migration selection, the results in our series are in keeping with findings from multinational studies as well as those performed in other host countries (United States, Canada), where the South Asian ethnic group was seen to be the youngest population experiencing a first AMI.²

It has been proposed that this group may have accelerated atherosclerotic disease resulting from a strong genetic predisposition enhanced by high rates of consanguinity, with insulin resistance as the main pathophysiological mechanism.³ The genetic-metabolic hypothesis concurs with the observations in South Asians in our study. Coronary risk in these patients was notable for abnormalities in glucose metabolism (a larger percentage of patients had previous diabetes mellitus treatment and higher glycohemoglobin concentrations) and in lipid metabolism (lower high-density lipoprotein cholesterol values,

which have a recognized anti-inflammatory and antithrombotic action).

Furthermore, South Asians in our series presented a significantly lower prevalence of hypertension, smoking, and cocaine abuse than the white Spanish population, with similar values of low-density lipoprotein cholesterol, but a lower prevalence of previous treatments with statins. Studies performed in Britain have reported contradictory results regarding the presence of these risk factors in South Asian patients, and this has been related to the heterogeneity of the subgroups analyzed,⁴ which makes extrapolation to our setting difficult. For its part, the risk profile observed among the young Spaniards in our series is in keeping with previous findings,⁵ in which early infarction has been associated with high rates of smoking and hypercholesterolemia, and glucose metabolism disorders have a smaller role. Our study highlights the specific features of cardiovascular risk in South Asians in our setting and the differences with respect to the young Spanish population.

There were no significant differences between the 2 groups in the clinical presentation of AMI (with or without ST elevation). Nonetheless, among patients with ST elevation AMI, there was a significantly higher percentage of anterior AMI in South Asian patients. In addition, coronary angiography showed more severe disease in these patients, and a larger number were considered to have nonrevascularizable lesions. AMI without coronary lesions was more common in the white Spanish population. These observations indicate that coronary disease in South Asians is related more to accelerated atherosclerosis than to predominantly thrombotic or vasospastic processes.

Despite the differences described, the 2 groups presented a similar in-hospital clinical course with low complication rates and mortality, which was likely due to the young age of the patients, low prevalence of comorbidities, absence of significant differences in the treatment received, and the improved in-hospital prognosis of AMI observed in our setting.⁶

This series is the first in Spain to address ischemic heart disease in South Asian immigrant patients. Knowledge of the differential characteristics of this ethnic group can facilitate the development

of primary and secondary prevention strategies adapted to their risk profile.

Miguel Caínzos-Achirica,^a Cosme García-García,^{a,*} Roberto Elosua,^{b,c} Neus Piulats,^d Lluís Recasens,^a and Jordi Bruguera-Cortada^a

^aServicio de Cardiología, Hospital del Mar, Parc de Salut Mar, Barcelona, Spain

^bGrupo de Epidemiología y Genética Cardiovascular, IMIM (Institut Hospital del Mar d'Investigacions Mèdiques), Hospital del Mar, Parc de Salut Mar, Barcelona, Spain

^cCIBER de Epidemiología y Salud Pública, Barcelona, Spain

^dCAP Drassanes, Barcelona, Spain

*Corresponding author:

E-mail address: cgarciag@parcdesalutmar.cat (C. García-García).

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Constrictive Infectious Pericarditis Caused by *Propionibacterium acnes*

Pericarditis constrictiva por *Propionibacterium acnes*

To the Editor,

Propionibacterium acnes is a slow-growing Gram-positive anaerobic bacillus, which is part of the bacterial flora of the skin and is also present in mucous membranes. Isolated cases of pericarditis caused by *P. acnes* have been reported^{1,2} but, even though this microorganism is a frequent cause of the disease,³ its characteristics have not been described. We report the characteristics of 5 patients with constrictive infectious pericarditis caused by *P. acnes*—initially manifesting as constriction in 3 and as effusive-constrictive syndrome in 2—characterized by a torpid clinical course, minimal signs of infection, much inflammatory activity and the need for surgery and prolonged treatment with antibiotics, antiinflammatory drugs, and corticosteroids.

The 5 patients were attended between 2006 and 2011. All underwent transthoracic echocardiography and 3 underwent magnetic resonance imaging studies. For diagnostic purposes, the microbiology results were combined with the echocardiogram

results in 4 patients and with the magnetic resonance imaging results in 1. Pathologic analysis was performed in 4 patients.

The mean age was 44.4 years; 4 were men. Possible predisposing factors are shown in the Table. The predominant symptoms were asthenia, chest pain and symptoms of heart failure with elevated venous pressure, dyspnea and edema of the lower limbs; 3 patients had pulsus paradoxus. One patient had fever and another had chylous ascites with tension. The mean diagnostic delay was 30 weeks. One patient had hypogammaglobulinemia, adenopathy and pulmonary infiltration caused by lymphangiectasia, which disappeared once pericardial constriction had been resolved. All electrocardiograms showed low voltage in precordial leads, with ST-segment depression and T wave inversion in 3 of them.

All chest X-rays showed cardiomegaly. Echocardiographic and magnetic resonance imaging studies are described in the Table. One patient had a calcified mass, with pericardial effusion and lateral myocardial hypokinesia. The Figure shows the surgical specimen, illustrating growth of *P. acnes*, together with an magnetic resonance imaging scan.

Medical treatment, microbiology and histology results are outlined in the Table. *P. acnes* grew in the samples between days 10 and 12. The results of blood cultures (3 patients) were negative. *P. acnes* was penicillin-sensitive in all patients. The 5 patients