

conversely reduce specificity, as observed after coronary angiography.

The complication described in the present case illustrates the risk of triggering ventricular arrhythmia during maximum stress caused by administering atropine, and could raise questions about routine use in this clinical context.

Óscar Fabregat-Andrés, Mónica Ferrando, Leandro Pérez-Boscá, and Rafael Payá\*

Servicio de Cardiología, Consorcio Hospital General Universitario de Valencia, Valencia, Spain

\*Corresponding author:

E-mail address: [paya\\_rafser@gva.es](mailto:paya_rafser@gva.es) (R. Payá).

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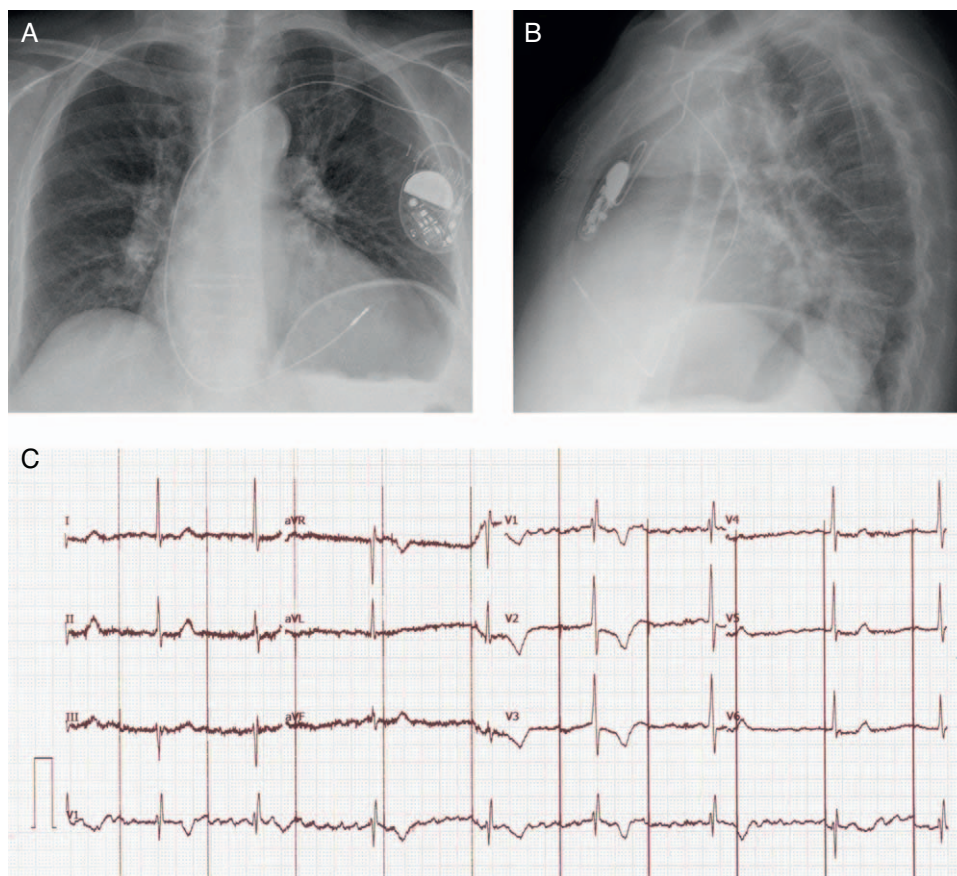
## Subacute Right Ventricular Perforation After Permanent Pacemaker Implant: Usefulness of Computed Tomography

### *Perforación subaguda del ventrículo derecho tras implante de marcapasos definitivo: utilidad de la tomografía computarizada*

#### To the Editor,

Cardiac perforation is rare after implantation of pacing or defibrillation wires and mainly occurs when the leads are inserted

into the myocardial wall. Perforation is increasingly common, is usually associated with the use of small-caliber active fixation leads, and can occur beyond the first few days (subacute) or even more than a month after implantation (late).<sup>1</sup> The most common clinical manifestations are cardiac tamponade, hemopericardium, pneumothorax or hemothorax, or diaphragmatic or pectoral stimulation, always accompanied by data indicating lead malfunction. Radiology and echocardiography can confirm the perforation by revealing progression of the lead beyond the cardiac silhouette or indirectly visualizing the presence of pericardial or pleural effusion. On occasion, the clinical presenta-



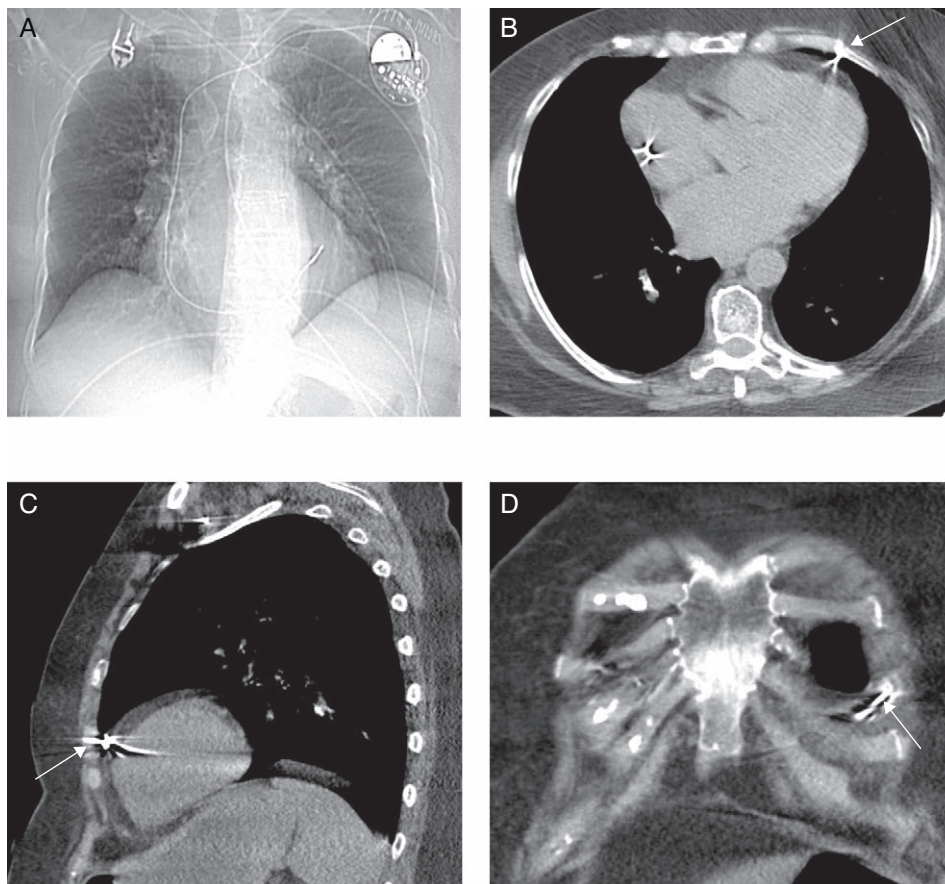
**Figure 1.** Chest X-ray after implantation in posteroanterior position (A) and lateral position (B). C: 12-lead electrocardiogram at the onset of chest pain, showing failure of pacemaker capture and sensing (asynchronous at 60 bpm with no ventricular capture).

tion may be atypical and the most common diagnostic techniques do not confirm an accurate diagnosis that would help the clinician make the safest, most appropriate therapeutic decision.

A 72-year-old woman with hypertension and chronic atrial fibrillation was admitted for a heart failure syndrome in relation to slow ventricular response (40 bpm) in the absence of secondary causes. Ten years earlier, the patient had been treated by surgery and radiotherapy for breast cancer. Echocardiography revealed mild left ventricular hypertrophy with preserved systolic function, as well as moderate degenerative mitral regurgitation with pulmonary hypertension. A single-chamber pacemaker system was implanted, with the generator placed at the left prepectoral subcutaneous level (Identity™ ADx SR 5180, St. Jude Medical) with a 6-French active fixation lead (Tendril™ ST 1888TC, St. Jude Medical) implanted in the right ventricular free wall (Figs. 1A and B), where the best parameters were achieved (threshold, 1 V × 0.5 ms; impedance, 1196 ohms; R wave, 8.6 mV). The pacemaker was programmed in VVIR mode with a lower threshold of 60 bpm. The patient remained asymptomatic with continuous pacemaker capture. Five days after the procedure, the patient consulted for the sudden onset of focal chest pain in the precordial region, which she described as repetitive stabbing; there was no hemodynamic deterioration. However, the electrocardiogram showed pacemaker capture and sensing failure, with a decrease in the impedance measured (Fig. 1C). An emergency echocardi-

graphy ruled out pericardial effusion but failed to visualize the tip of the lead. The chest X-ray ruled out pleural effusion or pneumothorax and showed the ventricular lead in an apparently normal position (Fig. 2A). Despite the findings of the chest X-ray and the echocardiogram, a multislice computed tomography (16 detector rows) study was performed to define the actual position of the ventricular lead prior to surgery. The study revealed that the lead perforated the myocardium, crossed the pericardial fat, pericardium and epicardial fat, and pulmonary parenchyma, and impacted against the periosteum of a rib (Figs. 2B-D) but did not cause pleural or pericardial effusion. Due to the possibility of late development of one of these manifestations, a decision was made to withdraw the lead. Based on the tomography findings, the lead was removed in the cardiac surgery operating theater under transesophageal echocardiography control; no pericardial effusion or other sequelae were observed. Several days later, a new pacemaker system was implanted in the right ventricular apex without incident.

In this clinical case, the absence of pleural or pericardial effusion could have been favored by rapid detection of the problem and the potential influence of the radiotherapeutic treatment received by the patient years earlier. The case underscores the usefulness of computed tomography to define lead location accurately, particularly in patients with an atypical presentation and in whom the usual techniques cannot confirm or define cardiac



**Figure 2.** A: chest X-ray following the onset of pain and the evidence of pacemaker malfunction; note the similar position of the lead compared to postimplantation. B, C, and D: computed tomography of the thorax in which no signs of pericardial effusion, pleural effusion, or pneumothorax are observed; the right ventricular free wall is perforated by the lead, which crosses the pericardial fat, pericardium and epicardial fat, makes contact with the pulmonary parenchyma (lingula), and remains lodged next to the costal arch.

perforation and the potential seriousness of the process could be underestimated. In addition, because contrast studies are not needed to obtain the information required, the lower radiation dose received by the patient is compensated by the potential benefits of its diagnostic capacity.

Miguel A. Arias,<sup>a,\*</sup> Jesús Jiménez-López,<sup>a</sup> Alberto Puchol,<sup>a</sup> and Alfonso Cañas<sup>b</sup>

<sup>a</sup>Unidad de Arritmias y Electrofisiología Cardíaca, Servicio de Cardiología, Hospital Virgen de la Salud, Toledo, Spain

<sup>b</sup>Servicio de Cirugía Cardíaca, Hospital Virgen de la Salud, Toledo, Spain

\*Corresponding author:

E-mail address: [maapalomares@secardiologia.es](mailto:maapalomares@secardiologia.es) (M.A. Arias).

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## Trends in Six Years Participation in Extracurricular Physical Activity in Adolescents. The AVENA and AFINOS Studies<sup>\*</sup>

*Tendencias de participación durante seis años en actividad física extraescolar en adolescentes. Estudios AVENA y AFINOS*

### To the Editor,

Meseguer et al. recent study<sup>1</sup> presented trends in adult leisure time and workplace physical activity in the *Región de Madrid* autonomous community of Spain between 1995 and 2008. Their results highlight a slight fall in levels of leisure time physical activity and an especially interesting increase in the proportion of men and women who engage in no leisure time physical activity at all. Currently, no data exist on trends in Spanish adolescents' engagement in leisure time or extracurricular physical activity. These data could be of interest to public health authorities given that adolescence is a stage of life characterized by a substantial decline in levels of physical activity, compared with infancy.<sup>2</sup> Moreover, an active lifestyle during adolescence could prevent cardiovascular and metabolic disease from developing at this age<sup>3,4</sup> and in adulthood.<sup>5</sup>

We set out to investigate trends in adolescents' participation in extracurricular physical activity in the city of Madrid (Spain) between 2001–2002 and 2007–2008. To achieve this, we used data on participation in extracurricular physical activity adolescents 13 to 17 years of age in Madrid, obtained in the AVENA (Food and Assessment of the Nutritional Status of Spanish Adolescents)<sup>6</sup> and AFINOS (Physical Activity as a Preventive Measure for Overweight, Obesity, Infection, Allergies and Cardiovascular Risk Factors in Adolescents)<sup>7</sup> studies. For the present study, we included data obtained on 573 adolescents (50.1% girls) in the AVENA study and 956 adolescents (48.5% girls) in the AFINOS study. Analysis of the sample reflects a slight increase in the proportion of adolescents engaging in extracurricular physical activity (60.9% vs 64.2%, in 2001–2002 and 2007–2008, respectively), although differences were non-significant ( $P = .193$ ). Analysis of data by sex found nonsignificant increases in the percentages of both boys (74.9% vs 76.9%;  $P = .455$ ) and girls (46.4% vs 51.6%;  $P = .171$ ) engaging in extracurricular physical activity. However, differences remained in the proportions of boys and girls who participated ( $P < .001$ ).

From data on weight and height (measured objectively in AVENA and self-reported in AFINOS), we calculated body mass

index and classified the adolescents as normal or overweight (including obesity).<sup>8</sup> We also classified them in 3 groups (poor, average, good) by self-reported physical condition level recorded on a 5-point Likert scale (very poor, poor, average, good, very good) used in both studies. We found no significant differences in the percentage of adolescents participating in extracurricular physical activity between 2001–2002 and 2007–2008 by body weight or physical condition ( $P > .05$ ). These results indicate the trend of adolescents participating in extracurricular physical activity in Madrid remained steady over these 6 years. Although the lack of a fall in the percentage of adolescents engaging in physical activity could initially be considered positive, a) differences between genders were maintained and girls participated less than boys, and b) educational and public health policy applied in Madrid in recent years aiming to increase adolescent participation in extracurricular physical activity has apparently not had the desired impact. Hence, we urgently need to design more effective policies aimed at increasing adolescent participation in extracurricular physical activity, principally directed at the adolescents themselves.

David Martínez-Gómez,<sup>a,\*</sup> Miguel Martín-Matillas,<sup>b</sup> Oscar L. Veiga,<sup>c</sup> and Ascensión Marcos<sup>a</sup>

<sup>a</sup>Grupo Inmunonutrición, Departamento de Metabolismo y Nutrición, Instituto de Ciencia y Tecnología de Alimentos y Nutrición (ICTAN), Consejo Superior de Investigaciones Científicas (CSIC), Madrid, Spain

<sup>b</sup>Departamento de Educación Física y Deportiva, Facultad de Ciencias de la Actividad Física y el Deporte, Universidad de Granada, Granada, Spain

<sup>c</sup>Departamento de Educación Física, Deporte y Motricidad Humana, Facultad de Formación del Profesorado y Educación, Universidad Autónoma de Madrid, Madrid, Spain

\*Corresponding author:

E-mail address: [d.martinez@uam.es](mailto:d.martinez@uam.es) (D. Martínez-Gómez).

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