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Impact of COVID-19 pandemic in cardiology admissions[☆]



Impacto de la pandemia COVID-19 sobre los ingresos hospitalarios en cardiología

Dear Editor,

On 31st January 2020, the first case of COVID-19 was reported in our country, on the island of La Gomera. On 24th February, the first case on the Spanish mainland was recorded, and subsequently there was an exponential increase in the number of people infected, resulting in the establishment of the state of alarm by the authorities.¹

The saturation of the health system, on the verge of collapse in many cases, has led to a restructuring of care processes, as well as a relocation of physical and material resources. Doctors from different specialties have assisted in this crisis, in many cases becoming part of multidisciplinary care units, created to address the number of hospital admissions caused by SARS-CoV-2. Despite the significant impact on the health system, its implications from a care point of view have not yet been studied and may be of interest in the management of eventual outbreaks.

We report the data from our site, which is a county referral hospital in the care of severe heart patients and in interventional cardiology procedures. For this, all the patients admitted to cardiology between 4th March (first case of SARS-CoV-2 in the county was reported) and 19th April 2020, were analyzed, date on which the situation of the center allowed the reorganization of the departments to its usual set-up. An equivalent period prior to the reporting of the first case was considered as control (from 17th January to 3rd March 2020). Scheduled procedures were carried out at the discretion of the corresponding units where the procedure was performed, following the recommendations in force.²⁻⁴

During the pandemic, there were a total of 67 cardiology admissions in our center (1.46 admissions/day), which meant a 69.9% reduction in the number of admissions compared to the same period prior to the pandemic, when 223 admissions took place (4.4 admissions/day).

The mean age of the patients admitted was 66.2 ± 15 years, similar in both periods (65.4 ± 15 vs. 68.4 ± 13 years; $p=0.22$). In the pandemic period, a reduction in admissions was detected for all coded aetiologies (Table 1). Those processes related to acute ischemic heart disease decreased by 56.8% overall, showing the greatest decrease in the number of acute ST elevation myocardial infarction (STEMI). Admissions for acute heart failure showed a reduction of 83.6%. It is noteworthy that during the pandemic there was no admission for myocarditis. Regarding emergency arrhythmic pathology, a 60% reduction was observed, more significant in admissions for tachyarrhythmias than for bradyarrhythmias. The number of elective admissions decreased by 85%. The number of procedures performed on admitted patients was reduced by 71.4% (314 vs. 92; $p < 0.01$), although the procedure/patient ratio was similar in both periods (1.41 vs. 1.37; $p=0.43$).

These data show a significant reduction in hospital admissions in the cardiology department. This trend, expected in elective procedures, is difficult to address in relation to emergency pathology. Although the implementation of teleconsultation could have prevented a certain number of admissions by optimizing medical treatment and limiting emergency care only in those most nec-

Table 1

Hospital admissions in the cardiology department and procedures performed.

	Before the COVID-19 pandemic	After the COVID-19 pandemic	Δ
Total admissions	223	67	-69.9%
<i>Emergency admissions</i>			
Non-ischemic chest pain	8	0	-100%
Unstable angina	13	5	-61.5%
STEMI	29	19	-34.5%
STEMI	32	8	-75%
Tachyarrhythmia	13	3	-73.1%
Bradyarrhythmia	17	9	-47.1%
Acute heart failure	18	4	-83.6%
Myocarditis-Complicated pericarditis	7	0	-100%
Others	13	8	-38.5%
<i>Elective admissions</i>			
Arrhythmia Unit	25	7	-72%
Hemodynamic Unit	38	4	-89.5%
Others	10	0	-100%
Procedures			
<i>Cardiac Imaging Unit</i>			
Transthoracic echocardiograms	100	34	-66%
Transoesophageal echocardiograms	18	2	-89.9%
<i>Hemodynamic Unit</i>			
Primary angioplasty	29	8	-73.4%
Emergency coronary angiography	28	18	-35.7%
Non-urgent coronary angiography	67	9	-86.6%
Structural intervention	4	1	-75%
<i>Arrhythmia Unit</i>			
Device implantation	32	13	-59.4%
Electrophysiological studies and procedures	11	2	-81.8%
Others	6	2	-66.6%
Non-invasive ischemia test	19	3	-84.2%

STEMI: acute myocardial infarction with ST-segment elevation; STEMI: ST elevation myocardial infarction.

essary cases, a significant number of patients may have delayed or omitted contact with healthcare.

A recent study estimates a 40% reduction in the number of emergency revascularizations performed in the context of STEMI in a multicenter cohort in our country after the start of the pandemic. The authors of the study pay attention to the multifactorial origin of this reduction, emphasizing the delay or absence of demand for emergency care, although they point to a probable underdiagnosis of acute cardiovascular disease at a time when the majority of resources were devoted to the detection of infection and its complications.⁵ Our data confirm the trend observed in said study for our autonomous community. Unfortunately, we do not have similar data related to other medical specialties that allow us to make comparative references.

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Maxillar osteonecrosis related to denosumab. Evaluation of nine cases[☆]



Osteonecrosis maxilar asociada a denosumab. Análisis de 9 casos

Dear Editor,

Osteoporosis (OP) currently represents the most prevalent metabolic disease worldwide. Pharmacological treatment is based, among others, on the use of antiresorptive drugs such as bisphosphonates (BP), although since its introduction in 2010 by the Spanish Agency of Medicines, denosumab (Prolia®), a non-chimeric human IgG2 monoclonal antibody that binds with high affinity and specificity to the receptor activator of nuclear factor κ B ligand (RANKL) is an increasingly popular therapeutic alternative.¹ Both drugs have the side effect of inducing osteonecrosis of the jaw (ONJ), which, despite its low incidence, represents a major health problem due to its high morbidity, difficulty of treatment and health cost.²

A retrospective hospital-based observational study of a series of 9 cases of women with OP treated with denosumab (60 mg IV subcutaneously every 6 months) who developed ONJ after administration was conducted with the aim of showing the severity of ONJ in relation to its use, evaluating previous treatment with BP and different risk factors associated with the patient. These patients were seen in the Oral and Maxillofacial Surgery Department (COMF) in Granada (Spain) from January 2015 to February 2018. The following variables were considered: age, medical history (diabetes and corticosteroid treatment), smoking (breakdown: mild <5 cigarettes/day, moderate 5–10 cigarettes/day and high >10 cigarettes/day), oral surgical interventions, previous treatment with BP (pharmacological type, route of administration and duration of treatment specified in years), ONJ staging according to the latest 2014 classification³ (establishing 4 degrees of severity: *At first*, S0, SI, SII and SIII) and treatment duration with denosumab.

The results obtained are shown in Table 1 in a systematic way.

The analysis of the results shows that 2.22% of patients with long-term BP treatment (mean of 12.5 years), history of oral surgery (dental extraction) and an average of 5.5 years in treatment with denosumab developed ONJ to its maximum stage (SIII) compared to 44.44% without oral surgery, a mean treatment with BP of 9.5 years and 13.25 years with denosumab who developed ONJ in mild stages (*At first*-SI), and only 2 cases (cases 6 and 7) were associated with denosumab alone (mean time of 6.5 years).

While the mechanism of ONJ development due to BP is widely reported in the scientific literature, the action of denosumab is not fully established. As an explanation for the common occurrence in the jaws, the physiological stress to which they are subjected has been highlighted, unique in exposing the bone to the external environment, which increases in dental and periodontal pathologies (abscess formation), iatrogenic disease (previous oral surgery), which require an increase in the speed of bone turnover and remodelling, which would be blocked by denosumab, a factor detected in the study (cases 1–4) associated with higher degrees of ONJ (SII-SIII), as well as the existence of diabetes or long-term use of corticosteroids (cases 1, 2 and 5) and a high incidence of smoking (cases 3 and 8). Despite the fact that denosumab, unlike BPs, lacks antiangiogenic activity, 3 clinical trials with denosumab ($n=52$) showed a higher risk of developing ONJ compared to other BPs ($n=37$), with a ratio of 1.4:1 ($p>0.05$).¹ However, the fact that denosumab is not absorbed into the bone matrix, would explain why cases 6 and 7, in which it was used as the only treatment, only developed ONJ in mild stages.

In conclusion, the study showed that the replacement of BP by denosumab, both used for more than 5 years, predisposes to the development of advanced ONJ, especially if there are risk factors, while denosumab treatment alone is related to mild cases, with previous existence of dental manipulations being the main risk factor

Table 1
Results obtained in the evaluation of the different variables.

	Age	Risk factors	Smoking	Oral surgery	BP treatment	Denosumab treatment	Staging ONJ
Case 1	76	NIDDM	Absent	Tooth extraction	Alendronate, 15 years	7 years	SIII
Case 2	63	Corticosteroids and methotrexate	Absent	Tooth extraction	Alendronate, 10 years	4 years	SIII
Case 3	67	Periodontal disease	High	Absent	Ibandronate, 12 years	3 years	SII
Case 4	55	Corticosteroids	Absent	Absent	Alendronate, 4 years	2 years	S0
Case 5	72	NIDDM	Absent	Periodontal surgery	Alendronate, 10 years	6 years	SII
Case 6	74	High risk of fractures	Absent	Absent	Absent	10 years	S0
Case 7	52	Vertebral fractures	Absent	Absent	Absent	3 years	<i>At first</i>
Case 8	56	High risk of fractures	Moderate	Tooth extraction	Absent	6 years	SII
Case 9	67	Absent	Mild	Absent	Ibandronate, 9 years	8 years	S0

BP: bisphosphonate; NIDDM: non-insulin dependent diabetes mellitus; ONJ: osteonecrosis of the jaw.

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