The Impact of COVID-19 Pandemic on the Interventional Cardiology Workload in Romania in 2020

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ABSTRACT

Coronavirus disease has overwhelmed the healthcare systems around the globe at an unprecedented level. The same was observed in the Romanian medical system. Interventional cardiology units have experienced a dramatic reduction in elective and urgent interventional procedures. The present report highlights the total number of coronary interventions, peripheral interventions, and interventions for structural heart diseases that were performed in 2020 in Romania in comparison to 2019.

Keywords: interventional cardiology, percutaneous coronary interventions, stents, COVID-19.

INTRODUCTION

Coronavirus disease, commonly known as COVID-19, has overwhelmed healthcare systems around the globe at an unprecedented level. The same was observed in the Romanian medical system. Interventional cardiology units have experienced a dramatic reduction in elective and urgent interventional procedures. The magnitude of this reduction is difficult to estimate, being a situation never encountered by most doctors of the younger generations. This article summarizes the data about the number of different interventional procedures performed

during 2020 in Romania by comparison with data already published until 2019 (1-6).

Like in 2019, all members from interventional cardiology centers in Romania were requested to fill a form about the total number of various procedures performed during 2020. The request was conducted by the president of Interventional Cardiology Working Group of the Romanian Society of Cardiology. 36 of 38 public and private interventional cardiology centers in Romania responded to our request and provided the necessary data.

Table 1 summarizes the general data from 2020 and 2019 and the percentage difference between these two years. In 2020, the number

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Year	2020	2019	↑ or ↓	Percentage (%)
Hospital				
Number of cathlabs	52	53		
Number of independent operators	132	132		
Number of in training operators	51	58		
Coronary interventions				
Coronary angiogram	29824	43164	↓	44.73
Total number of PCI	15879	21783	↓	37.18
PCI without stents	1116	1306	↓	17.03
PCI with stents	14608	20015	↓	37.01
STEMI with primary PCI	6587	8281	↓	25.72
PCI left main	553	961	↓	73.78
CTO	350	UR	UR	UR
Stents per patient ²	1.454	1.469706	↓	1.08
Total number of stents	21975	32055	↓	45.87
Total number of DES	21550	30207	↓	40.17
DES/stents ratio (%)	98	94	↑	4.08
Cutting, scoring	182	196	↓	7.69
Rotational atherectomy	79	58	↑	26.58
Shockwave	15	UR	UR	UR
FFR/IFR	238	360	↓	51.26
IVUS	75	145	↓	93.33
OCT	72	148	↓	105.56
Peripheral interventions				
Peripheral PTA ³	1114	1796	↓	61.22
Renal PTA	59	93	↓	57.63
Carotid PTA	213	382	↓	79.34
Total number of peripheral stents	841	1404	↓	66.94
Peripheral angiography	5184	6515	↓	25.68
Other interventions				
TAVI	494	428	↑	13.36
MitraClip	3	3	=	0
Aortic endoprosthesis	91	113	↓	24.18
Interventions in structural heart disease ⁴	171	140	↑	18.13

¹Total number of elective and urgent PCIs

²It will represent the ratio between the total number of implanted stents and the total number of patients undergoing PCI

³Number of peripheral angioplasty (lower and upper limbs artery, not including carotid arteries)

⁴Interventions in cardiac structural diseases: percutaneous closures of DSA, DSV, PFO, arterial duct, balloon valvulotomies, left atrial appendage closure
(PCI=percutaneous coronary intervention, STEMI=ST segment elevation myocardial infarction, DES=drug eluting stent, BVS=bioresorbable vascular scaffold, FFR=fractional flow reserve, IFR=instantaneous wave-free ratio, IVUS=intravascular ultrasound, OCT=optical coherence tomography, PTA=percutaneous transluminal angioplasty, TAVI=transcatheter aortic valve implantation, CTO=chronic total occlusion, ↑ - increase, ↓ - decrease)

TABLE 1
Reported data of different interventional procedures by all Interventional Cardiology Centers in Romania in 2019 and 2020

FIGURE 1. Total number of coronary angiograms and percutaneous coronary interventions (PCIs) performed in 2019 and 2020 in Romania

FIGURE 2. Total number of percutaneous coronary interventions from 2014 to 2020

FIGURE 3. Total number of primary percutaneous coronary interventions in 2019 and 2020

of coronary angiograms decreased by 44.7%, from 43.164 in 2019 to 29.824 in 2020. The total number of percutaneous coronary interventions (PCIs) was reduced by 37.18% from 21 783 in 2019 to 15 879 in 2020. This data includes the elective and urgent PCIs (Figure 1). In Figure 2 we can see the upward trend of the yearly number of PCIs from 2014 to 2019. The number of PCIs performed in 2020 fell towards the 2014-2015 levels.

Similarly to the decrease of elective procedures, the total number of primary PCIs in STEMI

patients also decreased by 25% in 2020, from 8 281 in 2019 to 6 587 in 2020 (Figure 3). Although the magnitude of the decrease in the total number of primary PCIs was lower when compared to elective PCIs, it still represented an important decrease that raises important problems related to the treatment of this subgroup of patients.

Although complex coronary procedures, like left main PCI, seriously decreased by almost 74% in 2020 compared to 2019, the number of implanted stents *per patient* remained almost un-

FIGURE 4. Total number of implanted stents from 2014 to 2020

FIGURE 5. Total number of TAVI and SHD interventions in 2019 and 2020 (TAVI=transcatheter aortic valve implantation, SHDs=structural heart diseases)

changed. However, the absolute number of implanted stents decreased by 45.8% in 2020 compared to 2019. In Figure 4 we can see that the number of stents implanted in 2020 is similar to the one reported in 2015.

Decreases between 51% and 100% were registered in 2020 in terms of number of intracoronary physiology and imaging investigations as well as peripheral angioplasties, compared to 2019 (Table 1).

The only field that still developed in 2020 was that of structural heart diseases and TAVI interventions. The number of transcatheter aortic valve implantation (TAVI) procedures doubled every year between 2015-2019 and the trend was maintained in 2020, with an increase by 13.3% compared to 2019 (Figure 5) (1-6). The number of procedures performed in structural heart diseases (SHD) increased by 18.1% between 2019 of 2020 (Figure 5). □

CONCLUSION

2020 was a difficult year for medical activity due to the COVID-19 pandemic. The inter-

ventional cardiology activity in Romania was considerably impacted. Although the number of most types of interventional cardiology procedures significantly decreased in 2020 compared to 2019, some progress was observed in terms of TAVI and SHD interventions.

There are a few possible explanations for this situation. First of all, hospitals reduced the elective procedure due the lack of available beds. The medical was mainly engaged in managing COVID-19 patients, whilst deferring for "chronic" patients. Resources were dedicated to intensive care unit, for protection equipment and for the expensive treatment of COVID-19 patients. Also, patients were reluctant to address hospitals for their cardiac problems medical checks.

On the other hand, the rise in the number of structural heart disease procedures by postponing their regular can be explained by the growing number of interventional centers and increasing experience of the medical teams. □

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