

In the name of God



Department of Internal Medicine
Shiraz E-Medical Journal
Vol. 7, No. 4, October 2006

<http://semj.sums.ac.ir/vol7/oct2006/card.htm>

Interventional cardiology in Shiraz University of Medical Science Affiliated Hospitals During Year 2005.

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Received for Publication: August 7, 2006, Accepted for Publication: October 15, 2006.

Abstract:

Cardiovascular disease, especially coronary artery disease, is the major cause of death in Iran after age 44. Revascularization procedures have pivotal role in improving quality of life in these patients. Data from cardiac intervention in Shiraz University of Medical Science can be compared with other centers to improve our faculties and equipments, better management of our future programs and ranking of Shiraz University scientific degree among other universities in Iran. To perform this study, an annual survey (year 2005) on cardiac intervention procedures was performed in Faghihi and Namazi Hospitals of Shiraz University of Medical Science. Randomly 1517 angiograms were selected and analyzed. It was resulted that:

- 1) During year 2005, 4380 diagnostic angiography and 808 angioplasty were performed of which coronary stenting was performed in 98.4% and drug eluting stents were used in 40.7% of procedures
- 2) Left circumflex coronary artery is the most frequent coronary involvement by significant lesion, followed by left anterior descending coronary artery.
- 3) Right coronary artery system is dominant system in 88.0 % of angiograms.
- 4) CABG (Coronary Artery Bypass Graft) is the most recommendation by faculties of university.
- 5) Patients accept their doctor's recommendation well.

It was concluded that despite coronary stenting remains the fastest growing procedure in interventional cardiology, in our society CABG is the leading choice of treatment. Although, angioplasty is the typical procedure for single vessel disease patients, multivessel disease patients undergo CABG.

Key Words: Coronary Angiography, PTCA, CABG, Interventional Cardiology.

Introduction:

Cardiovascular disease, in particular coronary artery disease, remains by far the major cause of death, disability, and hospitalization in the world. ^(1, 2) The age-adjusted decline in cardiovascular death rates during the 1970s and 1980s diminished in recent years, ^(2, 3) but this was more than offset by the aging of the population. Delivery of adequate cardiovascular care therefore constitutes one of the most important public health issues for future. In the care of patients with coronary artery disease, revascularization procedures such as percutaneous transluminal coronary angioplasty (PTCA) ^(4, 5) or coronary artery bypass graft (CABG) ^(6,7) have assumed a pivotal role in alleviating symptoms and improving quality of life. PTCA has long surpassed CABG as the most frequent revascularization modality both in Europe ^(8,9) and the United States and has become one of the most frequently performed major therapeutic intervention in medicine. Recent technological innovations, such as coronary stenting ⁽¹⁰⁻¹²⁾ and adjunctive medical therapy ⁽¹³⁻¹⁶⁾, further heightened the efficacy and safety of percutaneous coronary interventions, encouraging their widespread utilization. However, any therapeutic intervention requires careful scrutiny with respect to immediate and long-term outcome as well as adverse effects to ensure adequate quality. Furthermore, analysis of the need for revascularization procedures in the

context of different medical and socioeconomic circumstances and cost-effectiveness considerations has become increasingly important. The current report constitutes a summery on cardiac interventions in Shiraz University of Medical Science during year 2005.

Materials and Methods:

From January 2005 to January 2006, we analyzed an annual survey on cardiac intervention in Faghihi Hospital and Namazi Hospital of Shiraz University of Medical Science. The following cardiac interventions were studied.

- 1) Coronary angiography: Diagnostic coronary catheterization, irrespective of whether performed in conjunction with other diagnostic studies or PTCA.
- 2) PTCA: Coronary angioplasty procedure (case), irrespective of instrument used, the number of lesions or vessels dilated, whether a diagnostic study was carried out during the same session.
- 3) Non-coronary interventions: are defined as follows:
 - a. Temporary Pace Maker (TPM) insertion
 - b. Permanent Pace Maker (PPM) insertion
 - c. Balloon Valvuloplasty
 - d. Patent Dactus Arteriosus (PDA) closure
 - e. Patent Foramen Ovale (PFO) closure
 - f. Atrial Septal Defect (ASD) closure
 - g. IVC (Inferior Vena Cava) filter insertion

On the other hand, we randomly selected and analyzed 1517 angiograms. These films were stored from January 2005 to

January 2006. One observer, who was blinded to previous angiographic reports, reviewed them and reported.

Results:

A) General Results: Coronary Angiography: During year 2005, 4380 coronary angiography were performed in Shiraz University of Medical Science. 57.1 % (2501) in Namazi Hospital and 42.9 % in Faghihi Hospital (Table 1).

Table 1. Number of each cardiac intervention in year 2005 in Shiraz University of Medical science

Cardiac Interventions	Numbers	Cardiac Interventions	Numbers
Angiography	4380	TPM insertion	445
PTCA	808	PPM insertion	134
Single vessel PTCA	547	Valvuloplasty	74
Two-vessel PTCA	200	PDA closure	37
Three-vessel PTCA	61	ASD closure	11
Drug-eluting stent PTCA	329	PFO closure	5
Metallic stent PTCA	479	IVC filter insertion	22

TPM: Temporary Pace Maker, PPM : Permanent Pace Maker, PDA: Patent Dactus Arteriosus, ASD: Atrial Septal Defect, PFO: Patent Foramen Ovale, IVC: Inferior Vena Cava, PTCA: percutaneous Transluminal Coronary Angioplasty

PTCA: Totally 808 PTCA procedure were done in 2005 in Shiraz University of Medical Science. Due to better and more modern equipment of Faghihi Hospital, 748 (92.5 %) cases were performed in this hospital. Stenting was used in 98.4% of coronary interventions . Coronary stent was used in 547 patients (67.7 %) as single-vessel disease, 200 cases (24.7 %) as two-vessel disease and 7.6 % as three-vessel. Drug-eluting stent was used in 329 out of 808 cases. (40.7 %) Non-coronary interventions: Temporary pace maker insertion constituted the

most frequent non-coronary intervention in 2005 with the total of 445 cases. Other percutaneous interventions included; permanent pace maker insertion (134 cases), balloon valvuloplasty of 74 patients, and closure of 37 PDA, 11 ASD, and 5 PFO. Filter was installed in IVC of 22 patients. Peripheral angiography was performed in 100 patients ,carotid stenting in 38 patients & renal stenting was performed in 40 patients . If we put pacemaker insertion aside, valvuloplasty is the most frequent non-coronary

intervention. This is the same as European reports. ⁽¹⁷⁾

B) Specific Results:

These specific results were taken from analysis of 1517 angiograms.

1) Left circumflex coronary artery was the most frequent vessel with significant lesion ($\geq 70\%$ stenosis) (Table 2).

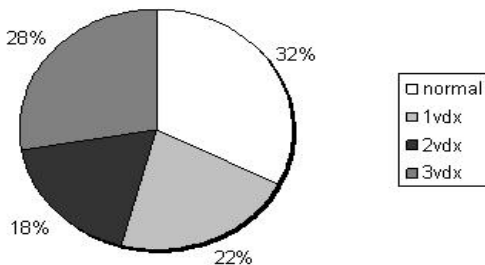
Table 2. Prevalence of each coronary artery involvement in 1517 cases

	LMCA	LAD	LCX	RCA
Number	51	616	625	601
Percent	3.4%	40.6%	41.2%	39.6%

LMCA: Left Main Coronary Artery, LAD: Left Anterior Descending Coronary Artery, LCX: Left Circumflex Artery, RCA: Right Coronary Artery

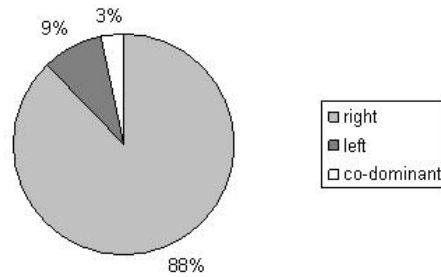
2) Four hundred and ninety two patients had normal angiograms (32.4 %). Number of patients with single-vessel disease, two-vessel disease, and three-vessel disease were 328, 277, and 420, respectively. (Figure 1)

Figure 1. Angiography results of 1517 patients



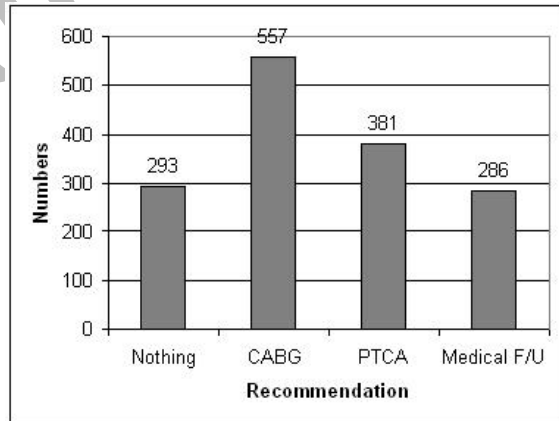
3) Right coronary artery system is dominant in 88.0 % of patients. (Figure 2)

Figure 2. Prevalence of coronary artery system dominance



4) The most frequent recommendation after angiography was CABG. PTCA was recommended in 381 patients. (Figure 3)

Figure 3. Frequency of each Doctor's recommendation



5) Patients respected to his/her doctor's recommendation. 63.2 % of patients with CABG recommendation, accepted surgery. (Table 3)

Table 3. Relationship between doctor's recommendation & patients' follow-up

			Follow-up				Total	
			Nothing	CABG	PTCA	Medical F/U		
Recommendation	Nothing	Count	38	0	1	38	77	
		Percent	49.4%	.0%	1.3%	49.4%	100.0%	
	CABG	Count	7	110	5	52	174	
		Percent	4.0%	63.2%	2.9%	29.9%	100.0%	
	PTCA	Count	8	10	87	45	150	
		Percent	5.3%	6.7%	58.0%	30.0%	100.0%	
	Medical F/U	Count	9	1	2	87	99	
		Percent	9.1%	1.0%	2.0%	87.9%	100.0%	
	Total		Count	62	121	95	222	500
			Percent	12.4%	24.2%	19.0%	44.4%	100.0%

CABG: Coronary Artery Bypass graft , PTCA: Percutaneous Transluminal Coronary Angioplasty

Discussion:

Despite coronary stenting remains the fastest growing procedure in interventional cardiology, ⁽¹⁷⁾ in our society CABG is the leading choice of treatment. Our explanations for this phenomenon are:

- Poor compliance of patients for PTCA and belief in CABG as the best choice
- Role of cardiac surgeons in the decision about the appropriate revascularization strategy.
- Involvement of cardiologists in the diagnostic catheterization procedures.

Although single-vessel PTCA remains the typical procedure for single-vessel disease patients, multivessel disease patients undergo CABG. The low incidence of multivessel PTCA comes somewhat as a surprise since several recent randomized trails reported

equivalence between PTCA and CABG in terms of prognosis, but a higher requirement of subsequent revascularization procedures in patients undergoing multivessel PTCA. ⁽¹⁸⁻²⁴⁾

Limitations: Due to loss of official cardiac intervention reports in other centers of Iran, we could not compare our findings to other universities.

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