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Interventional Cardiology in Shiraz Hospitals during Year 2006.

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Abstract:

Background: 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 Hospitals can be compared with other centers to improve our faculties and equipments, better management of our future programs and ranking of Shiraz catheterization centers degree among other cities in Iran and Middle East.

Materials and Methods: an annual survey (year 2006) on cardiac intervention procedures was performed in Faghihi and Namazi Hospitals of Shiraz University of Medical Science, Dena Hospital, Ordibehesht Hospital, Shiraz Central Hospital (MRI), and Kowsar Heart Hospital. Randomly 832 angiograms were selected and analyzed.

Results:

- 1) During year 2006, 11999 diagnostic angiographies and 2267 angioplasties were performed of which coronary stenting was performed in 99.48 %.
- 2) Left anterior descending coronary artery is the most frequent coronary involvement by significant lesion, followed by left circumflex coronary artery (opposite to year 2005).
- 3) By 3.7 % reduction in normal angiograms, we can conclude that patient selection for catheterization was more rational than year 2005.
- 4) CABG (Coronary Artery Bypass Graft) is the most recommendation by faculties of these hospitals, but less than year 2005 (36.7% to 31.3 %).
- 5) PTCA procedures were developed by 2.6 % in comparison to year 2005.
- 6) Drug-eluting stent and bare-metal stent were placed in 53.70 % (40.7 % in year 2005) and 46.30 % of patients, respectively.
- 7) Peripheral artery catheterizations were performed rather more than last year.

Conclusion: 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 growing in Shiraz, since year 2005, is acceptable.

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⁾, especially drug-eluting types, 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 be-

come increasingly important. The current report constitutes a summary on cardiac interventions in Shiraz hospitals during year 2006.

Materials and Methods:

From January 2006 to January 2007, we analyzed an annual survey on cardiac intervention in Shiraz hospitals such as Faghihi and Namazi Hospitals of Shiraz University of Medical Science (public hospitals), Dena Hospital, Ordibehesht Hospital, Shiraz Central Hospital (private hospitals), and Kowsar Hospital (heart hospital). This is opposite to our last year survey⁽¹⁷⁾ that was done only in Faghihi and Namazi Hospitals. 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) Bypass graft angiography: Diagnostic coronary catheterization of saphenous vein or internal mammary artery bypass graft.
- 3) 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.
- 4) Non-coronary interventions: are defined as follows:

- Pace Maker Insertion
- Mitral Valvotomy
- Patent Dactus Arteriosus) PDA) Closure
- Patent Foramen Ovale (PFO (Closure

- Atrial Septal Defect (ASD) (Closure)
- IVC (Inferior Vena Cava) (Filter Insertion)
- Renal Artery Angiography
- Renal Artery Angioplasty
- Carotid Artery Angiography
- Carotid artery Angioplasty
- Peripheral Artery Angiography
- Implanted Cardioverter / Defibrillator (ICD) Insertion

On the other hand, we randomly selected and analyzed 832 angiograms and total PTCA procedures (2267 cases). These films were stored from January 2006 to January 2007. One observer, who was blinded to previous angiographic reports, reviewed them and reported. Finally, we compare new results with previous results in year 2005⁽¹⁷⁾.

Results:

1) Coronary Angiography:

During year 2006, 11999 diagnostic coronary catheterizations were performed in Shiraz hospitals. Also, 40 bypass graft angiographies were done [About six percent reduction in Faghihi Hospital (1879 cases in year 2005 and 1669 cases in year 2006), and 3.15 % reduction in Namazi Hospital]. (Table 1 and Table 2)

- Left anterior descending coronary artery was the most frequent vessel with significant lesion (≥ 70 % stenosis). (Table 3)
- Two hundred and thirty six patients had normal angiograms. Number of patients with single-

vessel disease, two-vessel disease, and three-vessel disease were 190, 185, and 221, respectively. (Figure 1) In comparison to year 2005, we had about 3.7 % reduction in normal angiograms.

- Similar to previous year (2005), CABG was recommended rather than PTCA, but PTCA was performed 2.6 % more than last year. (Figure 2)

2) PTCA:

Totally 2267 PTCA procedures were performed in 2006 in Shiraz hospitals (2255 stent placement). Because of higher capacity and modern equipment, 972 PTCA procedures were accomplished in Kowsar Heart Hospital.

- As shown in Figure 3 patients with single-vessel disease were the majority of cases undergone PTCA (65.5 %), followed by two-vessel disease (27.0 %).
- Pure old balloon angioplasty were performed in only twelve patients (0.52 %), other patients were undergone stent placement (99.48 %). Bare-metal stent and drug-eluting stent were placed in coronary arteries of 1044 cases (46.3 %), and 1211 patients (53.7 %), respectively.

3) Non-coronary interventions:

According to table 1, these interventions were performed more than year 2005.

Table 1. Number of each cardiac intervention in Shiraz hospitals in year 2006

Cardiac Intervention	Number	Cardiac Intervention	Number
Angiography	11999	Carotid Artery Angioplasty	38
Bypass Graft Angiography	40	Peripheral Artery Angiography	100
Successful PTCA	2267	ICD Insertion	5
Fail PTCA	10	PDA Closure	15
Pure Old Balloon Angioplasty	12	ASD Closure	2
Stent Placement	2255	PFO Closure	6
Renal Artery Angiography	61	IVC Filter Insertion	43
Renal Artery Angioplasty	19	Pace Maker Insertion	491
Carotid Artery Angiography	63	Mitral Valvotomy	59

ICD: Implanted Cardioverter/ Defibrillator, PDA: Patent Dactus Arteriosus, ASD: Atrial Septal Defect, PFO: Patent Foramen Ovale, IVC: Inferior Vena Cava, PTCA: Percutaneous Transluminal Coronary Angioplasty

Table 2. Number of each coronary intervention in Shiraz hospitals during year 2006

Hospital	Angiography	PTCA
Dena	729	265
Faghihi	1669	556
Kowsar	5658	972
Namazi	2422	0
Ordibehesht	667	339
Shiraz Central Hospital (MRI)	854	135

PTCA: Percutaneous Transluminal Coronary Angioplasty

Table 3. Percentage of each coronary artery involvement in year 2005 & 2006

	LMCA	LAD	LCX	RCA
Percentage in year 2005	3.4 %	40.6 %	41.2 %	39.6 %
Percentage in year 2006	5.8 %	35.2 %	31.2 %	27.8 %

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

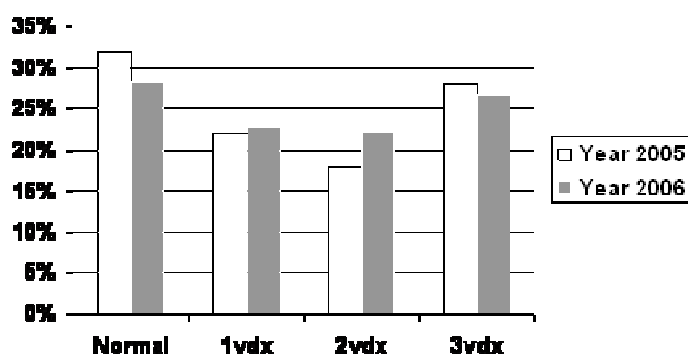


Figure 1. Angiography results in year 2006 in comparison to year 2005

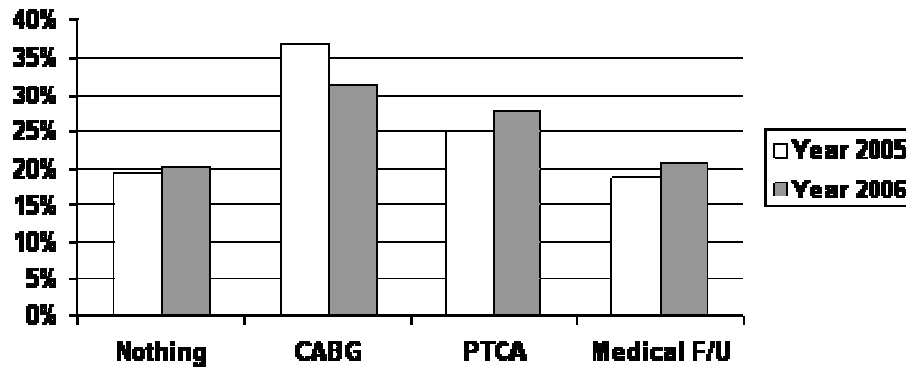


Figure 2. Doctors' recommendations in year 2006 in comparison to year 2005

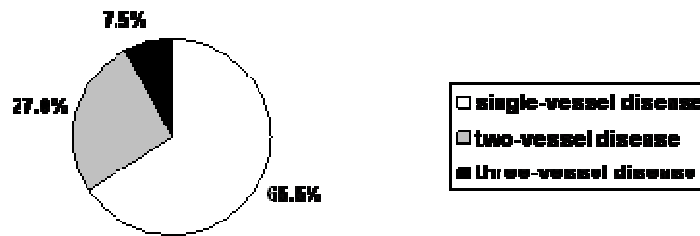


Figure 3. Percentage of vessels undergone angioplasty

Discussion:

By 3.7 % reduction in normal angiograms, we can conclude that patient selection for catheterization was more rational than year 2005. Despite coronary stenting remains the fastest growing procedure in interventional cardiology⁽¹⁸⁾, in our society CABG is the leading choice of treatment. Although, we have 2.6 % increase in PTCA procedure and 5.4 % reduction in CABG compare to last year. 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 and their loss of experience in PTCA 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⁽¹⁹⁻²⁵⁾. Limitations: Due to loss of official cardiac intervention reports in other centers of Iran and Middle East, we could not compare our findings to other centers.

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