

DIAGNOSTIC AND THERAPEUTIC INTERVENTIONAL PROCEDURES AT SGNHC

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Cardiovascular disease and other chronic, non-communicable diseases were once considered diseases of the industrialized countries; a “*Western disease*” that was solely based on ways of life utterly unknown to populations in Africa, Asia, and many other parts of the developing world. According to the World Health Organization's (WHO) World Health Report 2003, the global health agenda was still dominated by the belief that infectious diseases present developing world a threat than cardiovascular diseases. In reality, deaths from non-communicable diseases are sharply on the rise: the count currently stands at 33 million, but between 1990 and 2020, the number is expected to reach 58 million annually.

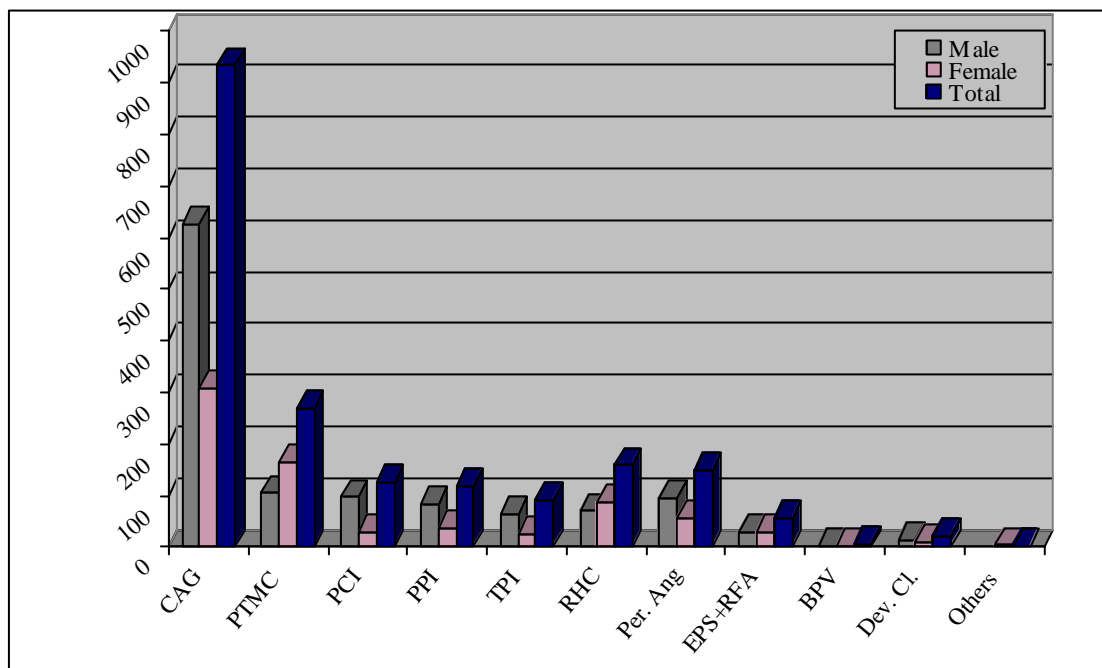
Cardiovascular disease is a global epidemic. CVD is the leading cause of death with approximately 17 million per year, or one out of three deaths around the globe. There are about 200 million people worldwide diagnosed with coronary heart disease, stroke, and diabetes. CVD currently contributes 30.9% of global mortality and 10.3% of the global burden of disease. While deaths from heart attacks have declined more than 50% since the 1960s in many industrialized countries. Currently 80% of global CVD-related deaths occur in low- and middle-income nations. The situation in Asia is bleak: “In India in the past five decades, rates of coronary disease among urban populations have risen from 4% to 11%. In urban China, the death rate from coronary disease rose by 53.4% from 1988 to 1996.”

Overall, mortality from CVD has been steadily declining in western Europe, North America, and Japan since the early 1970s. However, trends are not so favorable in Eastern Europe, Asia, Africa, and South America.

Review of cardiovascular disease pattern of admitted case in medical ward of Shahid Gangalal National Heart Centre (SGNHC) show that the most common diseases are ischaemic heart disease, rheumatic heart disease, hypertension, dilated cardiomyopathy and congenital heart disease. SGNHC provides both invasive and non-invasive services. This centre has two state of art catheterization laboratories and well trained interventional cardiologists. SGNHC is routinely providing invasive and interventional procedures, both diagnostic and therapeutics. The procedures performed from Jan 1 to 31 Dec.2006 are shown in figure and table below:

Table: Cath Procedures: 2006

S.No	Procedure	Total	Male	Female
1.	Coronary Angiogram	934	626	308
2.	Percutaneous Transluminal Mitral Commissurotomy (PTMC)	269	105	164
3.	Percutaneous Coronary Intervention (PCI)	126	97	29
4.	Permanent Pacemaker Implantation (PPI)	120	82	38
5.	Temporary Pacemaker Implantation (TPI)	91	64	27
6.	Right Heart Catheterization (RHC)	159	70	89
7.	Peripheral Angiogram	151	94	57
8.	Electrophysiological Study (EPS) and Radio Frequency Ablation (RFA)	55	28	27
9.	Balloon Pulmonary Valvuloplasty (BPV)	6	3	3
10.	Device Closure	22	13	9
11.	Others			
	Balloon Atrial Septostomy	2	1	1
	Renal Angioplasty	3	2	1
	Subclavian Angioplasty	1	0	1
	IVC plasty	1	1	0
	Total	1940	1186	754



Coronary angiogram was most common procedure; it was performed in 934 patients (48.14%). Ischaemic heart disease was the most common cause of hospital admission.

Coronary angiogram was done as routine procedure as in unstable angina, non ST elevation MI, stable angina or in those patients undergoing primary percutaneous intervention in ST elevation MI. Of those patients undergoing diagnostic angiogram 126 patients had Percutaneous Coronary Intervention (PCI). Among the 126 PCI patients, 120 Patients had elective PCI and 6 patients had primary PTCA. Rheumatic heart disease was the second most common cause of hospital admission. PTMC was done in 269 patients (13.86%). There was female preponderance with female to male ratio of 1.56:1. Right heart catheterization was done in 159 patients (8.2 %). This was done in acyanotic congenital heart diseases like Atrial Septal Defect, Ventricular Septal Defect and Patent Ductus Arteriosus where echocardiography showed very high pulmonary artery pressure and pulmonary vascular resistance (PVR) calculation was necessary to decide preoperatively whether operation was feasible or not. In those patients whose PVR was high and documentation of reversibility with 100% oxygen was necessary. Peripheral angiogram was done in 151 patients (7.78 %). The common types of peripheral angiogram were aortogram, renal angiogram, carotid, upper and lower limb vessels. Indications were documentation of MAPCAs and pulmonary artery in Tetralogy of Fallot, Renal Artery Stenosis, Takayasu's disease, peripheral vascular disease etc. Permanent pacemaker was implanted in 120 patients (6.2 %). The most common indications were complete heart block and sick sinus syndrome. Electrophysiology (EPS) with or without Radiofrequency Ablation (RFA) was done in 55 patients (2.83 %). The most common indication for EPS plus RFA was Paroxysmal Supraventricular Tachycardia (PSVT). Balloon Pulmonary Valvuloplasty was done in 6 patients with severe Valvular Pulmonary Stenosis. Device closure was done in 22 patients with Atrial Septal Defect, Patent Ductus Arteriosus and one patient had device closure for post MI VSD. Two new born babies with transposition of great arteries with intact atrium had successful balloon Atrial Septostomy. Three patients had Renal Angioplasty and one each patient had left Subclavian artery angioplasty and IVC plasty.

Complications:

A) Death: 7

- a) Coronary angiogram: 3
- b) Primary PCI in STEMI with cardiogenic shock: 2
- c) Unsuccessful PTMC: 1
- d) Right heart cath: 1

B) Pseudo aneurysm: 2

C) Groin haematoma: 1

D) Femoral artery thrombosis: 1

E) Arterio venous fistula : 1

Total no. of complications occurred in 12 patients. Among 3 deaths following coronary angiograms 1 patient had massive retroperitoneal bleeding, second patient had bleeding from vascular malformation of left kidney and had successful embolization of bleeding site and died because of Acute Respiratory Distress Syndrome following massive blood transfusion along with renal failure and the third patient died following ongoing ischaemia in patient who was admitted with NSTEMI. These 3 deaths following coronary

angiograms occurred after total 2718 coronary angiograms till date. Total PCI in one year (2006) was 126 with elective PCI in 120 patients and primary PCI in 6 patients. There was no death following elective PCI. 2 patients among primary PCI had acute ST elevation myocardial infarction with cardiogenic shock died because of refractory shock despite successful angioplasty. Literature show that mortality among primary PCI among cardiogenic shock is high and ranges from 42-50%. Our initial experiences in selected patients with acute ST elevation MI with cardiogenic shock show mortality of 50 %. Till date, we had primary angioplasty with STEMI and cardiogenic shock in 8 patients. Among them 4 patients survived and 4 died. Of one death following PTMC, the patient had severe calcified Mitral Stenosis with pulmonary oedema and rescue PTMC was unsuccessful and died because of pulmonary oedema. A 6 year old boy with complex cyanotic congenital heart disease had right heart catheterization with difficult arterial access. The boy developed thrombosis in left femoral artery with gangrene and died .There was 2 Pseudo aneurysm and one patient had groin haematoma. The young boy after right heart catheterization in Tetralogy of Fallot had thrombosis of access site at right femoral artery and successful embolectomy was done. In general overall complications are low and are acceptable.

Conclusion: Diagnostic and therapeutic interventional procedures are done routinely at Shahid Ghalib National Heart Centre .This is a tertiary referral cardiac centre in the country. With two state of art catheterization laboratories, more and more cardiac patients now have access to such services in the country itself. This centre not only provides routine service but has also started primary angioplasty in selected patients. With more and more confidence and faith shown by patients towards the centre, the numbers of such procedures are increasing every year.