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Research Article

**ANALYSIS OF IN-HOSPITAL COMPLICATIONS AFTER
PERCUTANEOUS CORONARY INTERVENTION (PCI) OF
CULPRIT VESSEL FOR ACUTE CORONARY SYNDROME
(ACS)****Dr Usama Sajid¹, Dr Muhammad Mohsin Ali², Dr Luqman Mukhtar³**¹Medical Officer Siddiq Sadiq Memorial Trust Hospital, Gujranwala, ²Medical Officer DHQ Hospital, Faisalabad, ³Medical Office THQ Hospital Daska, Sialkot.**Abstract:**

Introduction: Acute coronary syndrome is a term used for any condition brought on by sudden, reduced blood flow to the heart. Acute coronary syndrome depends on the specific characteristics of each element of the triad of clinical presentation (including a history of coronary artery disease). **Objectives:** The main objective of the study is to analyze the in-hospital complications after Percutaneous Coronary Intervention (PCI) of culprit vessel for Acute Coronary Syndrome (ACS). **Materials and methods:** This descriptive case series study was conducted at Punjab Institute of Cardiology, Lahore during September to December 2018. It was non-probability purposive sampling. All the baseline procedural and biochemical characteristics recorded. Frequency of males and females undergoing PCI of Culprit Vessel during this duration was calculated then these patients were evaluated for Post PCI Complications. **Results:** Males were more in number as compared to females. i.e 75 males (55.55%) and 60 females (44.44%). Out of these 110 patients (55 males and 55 females) were selected for this study. These patients were fulfilling the Inclusion and exclusion criteria. Baseline characteristics of the patients who underwent PCI are shown below in table 1. Mean age of the male patients was 49.8 ± 9.60 while that of female patients was 52.1 ± 8.91 . **Conclusion:** It is the total obstruction of the artery usually at the site of access requiring surgical repair. Conclusion is defined as total obstruction of blood vessel usually due to the thrombus formation dissection or other mechanisms usually at the site of access of plaque pulse or Doppler signal and associated with sign and symptoms of an ischemic limb requiring surgical intervention.

Key Words: Percutaneous Intervention, Culprit Vessel, Gender disparity, Vascular Complications.**Corresponding author:****Dr. Usama Sajid,**

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INTRODUCTION:

Acute coronary syndrome is a term used for any condition brought on by sudden, reduced blood flow to the heart. Acute coronary syndrome depends on the specific characteristics of each element of the triad of clinical presentation (including a history of coronary artery disease). The prevalence of the ACS ranged from 7.8% to 32.2%. The number of PCI is increasing with the passage of time due to increased awareness and improved outcomes compared to fibrinolytic therapy for coronary artery disease (CAD) [1]. Meta- analyses of randomized clinical trials have reported that primary PCI is more cost effective compared to fibrinolytic and reduces the incidence of death, reinfarction and stroke. Furthermore in stable patients and in patients with multi vessel disease, PCI has become the preferred procedure in the United States with declining mortality in patients undergoing multi vessel PCI [2].

PCI also has got many complications like other interventions i.e Death, myocardial infarction (MI), emergency CABG or re do PCI ,stroke ,contrast induced nephropathy (CIN) Vascular complications before intervention [3]. GpIIb/IIIa inhibitors have reduced the mortality by 20% over 6-12 months in unstable angina and non ST elevation myocardial infarction (NSTEMI). PCI has not shown any mortality benefit in unstable angina. Ischemic heart disease (IHD) is a major cause of morbidity and mortality in women. Sex based differences has been area of active investigation over the past two decades [4]. Symptoms of females appear at elder age as compare to male, however the symptoms of females are atypical as compare to males. The diagnosis is more difficult in females and prognosis is less favorable [5]. It has reported in several studies that female undergo intervention less frequently as compare to males. PCI on females is usually is usually more complicated due to gender related small sized coronary arteries [6]. Thus females are at more risk of post PCI complications and also at increased risk of mortality and morbidity [7].

OBJECTIVE:

The main objective of the study is to analyze the in-hospital complications after Percutaneous Coronary Intervention (PCI) of culprit vessel for Acute Coronary Syndrome (ACS).

MATERIALS AND METHODS:

This descriptive case series study was conducted at Punjab Institute of Cardiology, Lahore during September to December 2018. It was non-probability purposive sampling. All the baseline procedural and biochemical characteristics recorded. Frequency of

males and females undergoing PCI of Culprit Vessel during this duration was calculated then these patients were evaluated for Post PCI Complications.

INCLUSION CRITERIA:

1. PCI in patients who are admitted with ACS.
2. PCI in both males and females patients >30 years of age
3. PCI with either bare metal stents (BMS) or drug eluting stents (DES)
4. PCI for single vessel disease (SVD) i.e culprit vessel.
5. PCI through radial or femoral route.

EXCLUSION CRITERIA:

1. Previous PCI or CABG
2. Left main Stem (LMS) PCI
3. Plain and balloon angioplasty (POBA)

DATA COLLECTION:

These patients were admitted to hospital with ACS. These patients received Primary, Rescue and facilitated PCI. 110 patients (55 males and 55 females) out of these 135 patients were selected. Written consent was taken before starting the study protocol. Detail History with demographic features was taken and patients were divided in two groups on the basis of gender. Risk factors were also stratified i.e

- Diabetes Mellitus (fasting blood sugar >126 mg/dl and Random >200 mg/dl)
- Hypertension (sustained elevation in blood pressure of >140/80 or previous history) and smoking.

DATA ANALYSIS:

All data was entered and analyzed by using SPSS (statistical Package for Social Sciences) version 12 for window. Continuous (Age, BMI) and Categorical variables (Gender, procedural complications i.e CIN, Hematoma, MI. etc), were presented as mean ± standard deviation and frequency/percentages respectively. Risk factors for IHD i.e diabetes mellitus and hypertension, smoking and hyperlipidemia are presented as frequency tables.

RESULTS:

Males were more in number as compared to females. i.e 75 males (55.55%) and 60 females (44.44%). Out of these 110 patients (55 males and 55 females) were selected for this study. These patients were fulfilling the Inclusion and exclusion criteria. Baseline characteristics of the patients who underwent PCI are shown below in table 1. Mean age of the male patients was 49.8 ± 9.60 while that of female patients was 52.1 ± 8.91 .

Out of 525 male patients who underwent PCI, 21% of the patients were diabetics. Hypertension was present in 46% of the male patients. Among the female patients the incidence of diabetes and hypertension

was 29% and 53% respectively. The mean body mass index (BMI) of female patients was also higher than the male patients i.e 30.2 vs 28.6 respectively.

TABLE 1. Base line characteristics

Variable	Male	Female
Age, years	49.8 ± 9.60	52.1 ± 8.91
Diabetes Mellitus	25.45% (14)	32.72% (18)
Hypertension	50.90% (28)	56.36% (31)

TABLE 2. This table below shows the comparison of indications for percutaneous Intervention between males and females.

TABLE 2. Indications for PCI

	Male(55)	Female(55)
Acute Myocardial Infarction (primary)	14.54% (8)	5.45% (3)
Acute Myocardial Infarction(rescue)	5.45% (3)	3.63% (2)
Acute Myocardial Infarction (elective)	41.81% (23)	56.36% (31)
NSTEMI	27.27% (15)	25.45% (14)
Unstable Angina	10.90% (6)	9.09% (5)

Characteristics of the procedure are shown here

TABLE 3. Procedural Characteristics

	Male	Female
Radial PCI	96.36% (53)	94.54% (52)
Femoral PCI	3.6% (2)	5.45% (3)
GPIIb/IIIa Inhibitor used	85.45% (47)	74.54% (41)
Bare Metal Stent (BMS)	21.81% (12)	29.09% (16)
Drug Eluted Stent(DES)	78.18% (43)	70.90% (39)

The table given below shows the difference in in-hospital complications between males and females. Cumulative vascular complications were significantly higher in female population as compared to males while there was no significant difference of contrast

induced nephropathy between both the groups.

DISCUSSION:

Main function of heart is to provide circulatory needs of the body. Heart also need its own metabolic requirements. These requirements are met through

the coronary blood flow. Heart needs aerobic metabolism, there is limited capacity of heart to tolerate anaerobic metabolism. Heart has a unique mechanism of oxygen extraction. Under basal condition it extract high degree of oxygen so that it can adjust a changing oxygen needs by only a small increment in oxygen extraction⁸. There is more coronary blood flow if there's more need of oxygen to the cardiac muscle. To measure the oxygen consumption by cardiac muscle certain studies have been done on animals⁹. It is very difficult to calculate the mean myocardial oxygen consumptions (MVO₂) there is laboratory data that can be used to measure MVO₂. To meet the bad time heart has sufficient reservoir of oxygen¹⁰.

Oxygen consumption correlated with the tension time index only until the peak systolic pressure had been attained at which 91% of oxygen consumption per beat had occurred. Oxygen consumption is not uniform throughout the systole (tension time index). It is due to the insensitivity to the duration of pressure maintenance between peak systolic pressure and the end of relaxation. Wall stress is more related to MVO₂¹¹.

It is calculated that about 20% of the oxygen consumption of the working heart is the basal oxygen requirement of the potassium plegic heart¹²⁻¹³. It has also been determined that oxygen requirement of electrical activation of the heart has been determined to be less than 1% of the oxygen need of the normal working heart¹⁴.

CONCLUSION:

It is the total obstruction of the artery usually at the site of access requiring surgical repair. Conclusion is defined as total obstruction of blood vessel usually due to the thrombus formation dissection or other mechanisms usually at the site of access of plaque pulse or Doppler signal and associated with sign and symptoms of an ischemic limb requiring surgical intervention.

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