AN OBSERVATIONAL STUDY ON THE TIMING OF APPEARANCE OF CORONARY COLLATERALS IN ACUTE ST ELEVATION MYOCARDIAL INFARCTION (STEMI) PATIENTS UNDERGOING PHARMACOINVASIVE THERAPY

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STUDY BACKGROUND

- The appearance of coronary collaterals after STEMI is usually associated with the duration of coronary occlusion.

- We aim to determine the timing of the angiographic appearance of coronary collaterals in acute STEMI patients undergoing pharmacoinvasive therapy.

METHODS & MATERIALS

- This study was conducted in our centre during the period from July 2017 to August 2017.

- About 121 acute STEMI patients who had undergone thrombolysis and coronary angiogram under pharmacoinvasive therapy were selected.

- Out of 121 patients, about 30 patients had collaterals in their diagnostic coronary angiogram and they were selected for this study and risk factors were analysed.

EXCLUSION CRITERIA

- Previous coronary bypass surgery,
- Left main stenosis and
- Nonculprit lesion with a stenosis of more than 80% diameter.

STATISTICAL METHODS

- To analyze the temporal appearance of coronary collaterals, subjects were grouped according to time units. The time intervals were determined arbitrarily.
- Using logistic regression analyses, we examined preinfarction angina, hypertension, smoking, DM, dyslipidemia and age as potential determinants of collateral appearance.

| BASELINE CHARACTERS OF TOTAL 121 Pts	NO. (%)
Age mean (range 36-73yrs)	52.8 ± 10.7
Male	104 (85.9%)
Smoker	61 (50.44%)
DM	42 (34.71%)
SHT	58 (48.03%)
Dyslipidemia	53 (43.82%)
Anterior infarction	72 (59.5%)
collaterals	30 (24.79%)
PCI	41 (33.88%)
Time of coronary angio mean hrs	15.9 ± 4.95
Collaterals	
Rentrop 0	91 (75.2%)
Rentrop I	18(14.8%)
Rentrop II	12(9.9%)
Rentrop III	0
Time of appearance of collaterals (30 pts)	
<6hrs	0(0%)
6-12hrs	7(23.33%)
12-18hrs	12(40%)
18-24 hrs	11(36.67%)
IRA	
LAD	72(59.5%)
LCX	13(10.74%)
RCA	36(29.75%)

Comparison of parameters between Rentrop 0 &1 and Rentrop 2&3 collaterals within 24 hrs after STEMI

	Age	Male(%)	SHT (%)	Diabetes (%)	Dyslipidemia (%)	Preinfarction angina (%)	Smoking (%)	Onset of angiography hrs
All	51.9±10.7	104(85.9)	58(47.9)	42 (34.7)	53 (43.8)	7 (0.5)	61(46.7)	15.9±4.9
Rentrop 0 & I (109 pts)	52.9±11.4	93(50)	53(48.7)	38 (34.8)	47 (43.1)	1 (0.9)	56 (50.5)	14.6±4.5
Rentrop 2 & 3 (12 pts)	49.8±9.6	11(91.7)	5 (41.6)	4(33.3)	6 (50)	6 (50)	5 (41.6)	17.9±5.1
ODDS ratio 95% CI	1.1 0.6-1.8	0.9 0.05-4.4	1.3 0.4-4.4	0.99 0.3-3.8	0.8 0.2-2.5	1.1 0.8-2.3	1.4 0.4-4.7	0.82 0.3-2.3
P value	0.9	0.6	0.72	0.9.	0.6	0.0001	0.7	0.8

RESULTS

About 30 patients had collateral formation in coronary angiogram. 26 were male patients (21.5%). Mean age was 51.9 ±10.67. For the onset-to-angiography groups of 0–6, 6–12, 12-18,18–24 hr the prevalence of angiographic collaterals (Rentrop classification) were 0, 5.78%, 9.9%and 9.1%, respectively (p < 0.001).

Rentrop collateral grade I were in 18 patients (14.9%) and grade II in 12 patients (9.9%). About 23 patients (19%) developed collaterals within 12 hrs to 24 hrs after thrombolysis. Among the clinical factors, preinfarction angina (5.8%) was the only independent determinant
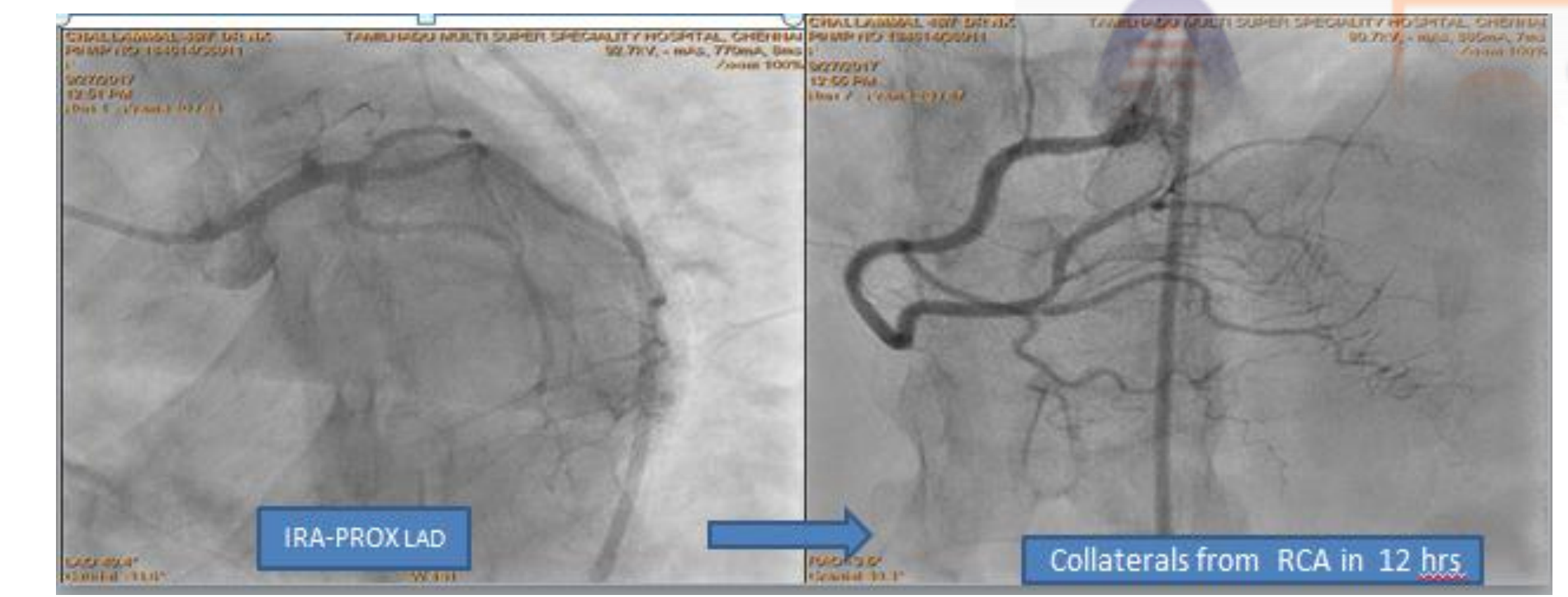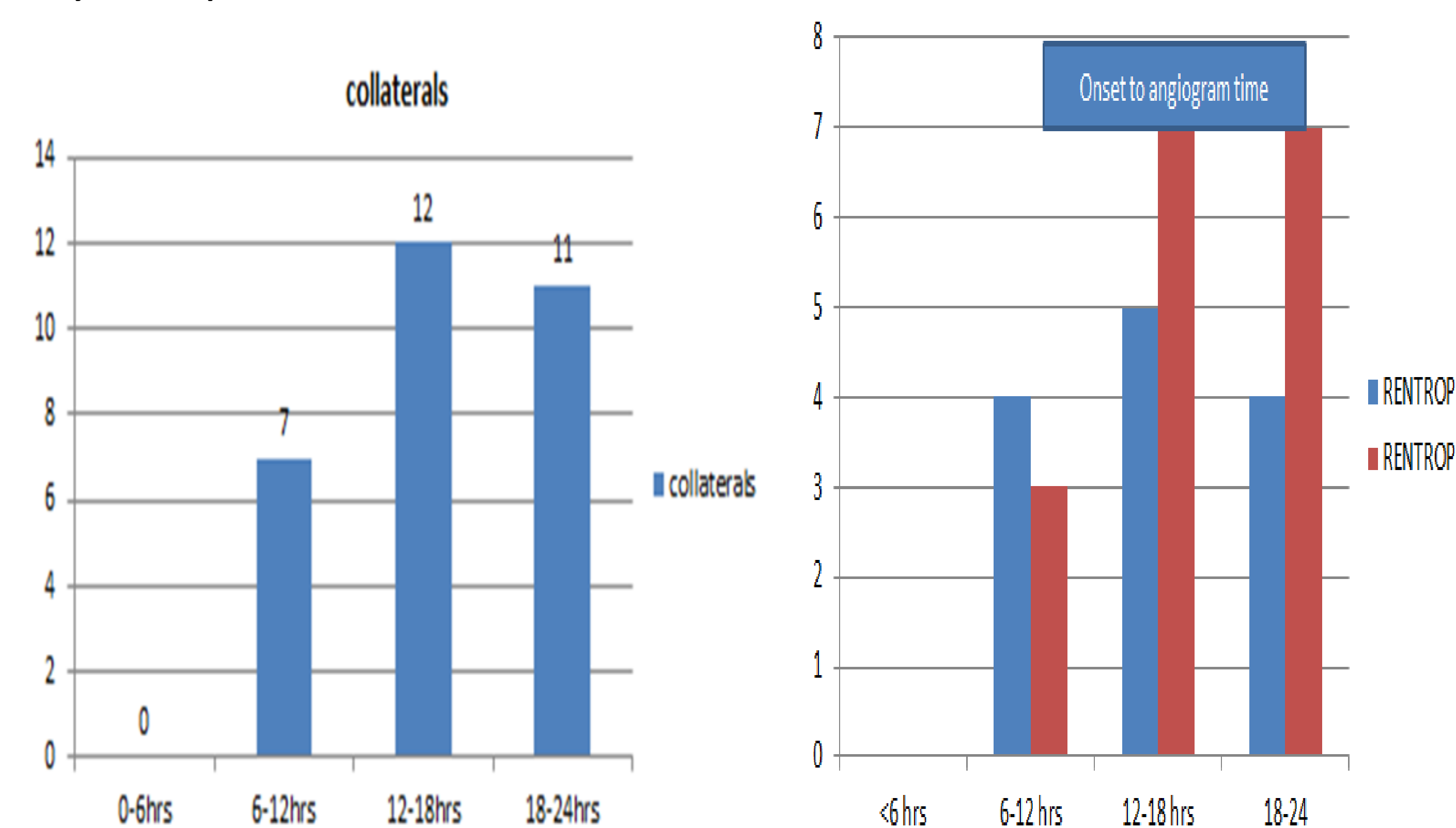
DISCUSSION

Presence of collaterals increases significantly during the first 24 h, with 24.8% of patients showing collaterals at 24 hrs versus 5.8% of patients within 12 hrs.

Elsman et al. – About 1059 patients who underwent PCI within 6 hr after STEMI and reported a prevalence of collaterals of 10%. In our study it is 5.8% within12hrs.

Sunanto Ng, Sunarya Soerianata et al. Presence of collaterals within 9hrs of onset of MI was 31% and within 24 hrs - 41%. In our study 24.8% in 24 hrs.

Preinfarction angina was the independent determinant of the presence of collaterals during acute MI.

LIMITATION

Limited population.

Collaterals less than 100 μm not identified.

Since the study is observational and retrospective, it is difficult to adjust all clinical determinants.

CONCLUSION

In our study, about 24.8% patients developed coronary collaterals within 24 hours of STEMI.
Among the clinical factors, preinfarction angina was the only statistically significant independent determinant.

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IRA-PROX LAD — Collaterals from RCA in 12 hrs

IRA-PROX RCA — Collaterals from LAD within 8 hrs.

collaterals

Onset to angiogram time