Section: General Medicine

Research

EVALUATION OF DILTIAZEM AS ANTISPASMODIC DRUG IN RADIAL ARTERY IN CORONARY CATHETERIZATION RETROSPECTIVE STUDY

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Received : 20/10/2022
Received in revised form : 24/11/2022
Accepted : 06/12/2022

Keywords:
Antispasmodic, Coronary, Catheterization, Allen's test, Revascularization, Bolus.

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DOI: 10.47009/jamp.2023.5.1.30

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (1); 137-139

Abstract

Background: The usage of anti-spasmodic medications has proven efficient in decreasing the spasm of radial artery but these vasodialating drugs are not standardised with proper dosage to prove efficiency in anti-spasmodic action. **Materials and Methods:** Out 90 patients, 45 were given Diltiazem 5 mg and 45 were given 10 mg Diltiazemas bolus. 500 units of heparin and 100 mg NTG was administered intra-arterially after sheath insertion. 1% of xylocaine was used locally with 5mg/kg of Fentanyl I.V as additional drug for pain, spasm and to maintain hemodynamic support. Duration between sheath insertion and coronary cannulation were compared in both groups.
Result: In comparison of baseline characters, odds ratio of spasm was 0.58, pain was 1.17 additional drug usage 0.45, support 1.5 and comparison of variable of both groups procedure time was highly significant p value ($p<0.001$). **Conclusion:** 5mg of Diltiazem was effective antispasmodic agent used transradially as 10 mg Diltiazem.

INTRODUCTION

Coronary catheterization and angioplasty performed viathe radial artery access is associated with a significant reduction in access site complications in comparison to femoral or brachial access site.[1] More recently radial artery access is also linked to reduce the mortality in comparison to femoral artery access in patients with acute myocardial infarction.[2]

Trans-radial access for percutaneous procedures (either diagnostic or therapeutic) in the coronary artery is an alternative to the femoral approach particularly in cases of complex peripheral vascular disease and in some patients using anticoagulants, anti-platelets or fibrinolytic drugs.[3] Although some doctors consider this approach as the first choice, but it is still used as an alternative in most centres partly because of its limitations and complications.[4,5] Themost frequent complication is local bruising, spasms and radial artery occlusion. Heparin use through a proper radial artery sheath decreased the incidence of occlusion. The use of anti-spasmodic medications has proven efficient in decreasing the radial artery spasm but vasodialating drugs are not standardised therefore the use of these drugs varies considerablly. Hence an attempt was made to evaluate the influence and dosage of injectable Diltiazem on local complications of trans-radial coronary angiography.

MATERIALS AND METHODS

90 (Ninety) patients aged between 35 to 65 years admitted at Medicine ward of Faculty of Medical Sciences, Khaja Bandanawaz University, Kalaburgi–585104 were studied.

Inclusive Criteria

Patients diagnosed as IHB and had positive Allen's test were selected for study.

Exclusion Criteria

Patients previously undergone coronary angiography, cardiac arrhythmia, Ascending aorta aneurysm, valvular heart disease, congenital cardiomyopathy, continuoususage of calcium channel blockers, history of myocardial re-vascularisation were excluded from study.

Method

Patients were classified into two groups (45 patients in each group) Group-I were administrated 5mg Diltiazem versus group-II was administrated 10mg Diltiazem of IAD in patients undergoing coronary procedures. All patients were administrated with 500units of heparin and 100 mg NTG intra-arterially after sheath insertion. 1cc of 1% xylocaine was used locally, with 1mg/kg of Fentanyl intravenous, because pain, spasm, need for additional drugs, need for hemodynamic support and time between sheath

ISSN (O): 2687-5365; ISSN (P): 2753-6556

insertion and coronary cannulation were compared in both groups and results were noted.
Duration of study was January – 2021 to December – 2021.

Statistical Analysis

The base line characters, variables in procedures in both groups were compared with z test and noted. The statistical analysis was carried out in SPSS software. The ratio of male and female was 2:1.

RESULTS

[Table 1] Comparison of base line characters during treatment in Group-I V/s

Group-II

- Spasm – 4 (8.8%) in group-I, 7 (15.5%) in group-II or was 0.58
- Pain – 7 (15.5%) in group-I, 6 (13.3%) in group-II or 1.17
- Additional drugs given to – 4 (8.8%) in group-I, 9 (20%) in group-II or 0.45
- Supporters – 12(26.6%) in group-I, 8 (17.7%) in group-II or 1.5

[Table 2] Comparison of variables in both groups during treatment

- Loc to sheath time mean value – 4.4(±4.2) in group-I, 39 (±3.3) in group-II, t test was 0.62 and p value was insignificant
- S to C time mean value – 3.2 (±2.4) in group-I, 33 (±3.2) in group-II, t test was 0.16 and p value was insignificant
- Procedure time mean value – 27.5 (±17.2) in group-I, 33.8 (±18.8) in group-II, t test was 1.65 and p<0.009 (Highly significant).

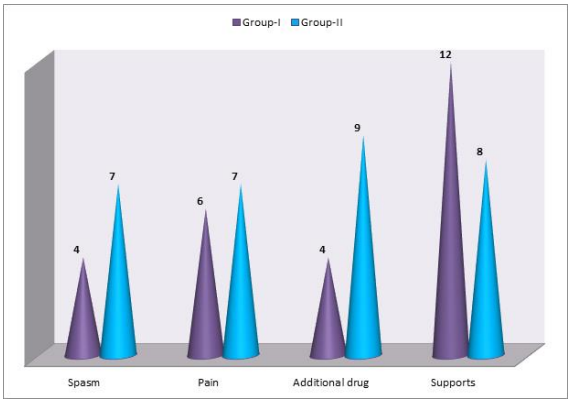

Figure 1: Comparison of baseline characteristics during treatment

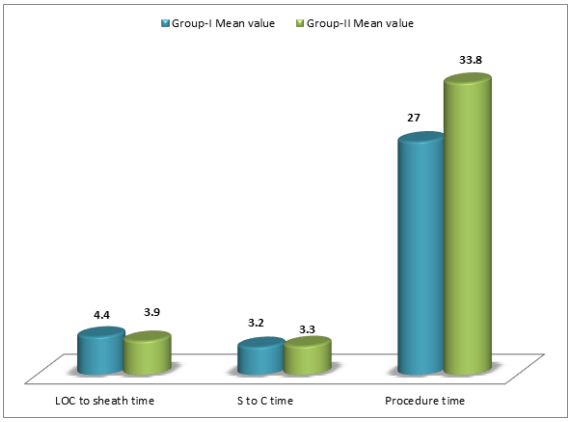

Figure 2: Comparison of variables in both groups during treatment

Table 1: Comparison of baseline characteristics during treatment.

Variables	Group-I (45 patients)		Group-II (45 patients)		Odd ratio
	Number	Percentage	Number	Percentage	
Spasm	4	8.8	7	15.5	0.58
Pain	6	13.3	7	15.5	1.17
Additional drug	4	8.8	9	20	0.45
Supports	12	26.6	8	17.7	1.5

Table 2: Comparison of variables in both groups during treatment.

Variables	Group-I Mean value	Group-II Mean value	t test value	p value
LOC to sheath time	4.4 (±4.2)	3.9 (±3.3)	0.62	p>0.53
S to C time	3.2 (±2.4)	3.3 (±3.2)	0.16	p>0.86
Procedure time	27 (±17.2)	33.8 (±18.8)	1.65	P<0.001 (HS)

HS = highly significant

DISCUSSION

The current study evaluates Diltiazem as an antispasmodic drug in the radial artery during coronary catheterization in the North Karnataka population.

In the comparison of baseline characters during treatment spasm in group-I was 4 (8.8%), 7 (15.5%) in group-II and odd ratio (OD) was 0.58. Pain was in 7 (15.5%) Group I patients, 6 (13.3%) group-II patients, Odds ratio was 1.17%. Usage of additional drug in 4 (8.8%) in group-I, 9 (20%) group-II and Odds ratio was 0.45 supports drug usage 12 (26.6%) in group-I, 8 (17.7%) in group-II Odds ratio was 1.5 [Table 1].

In the comparison of variables in both groups procedure time in group-I was 27.5 (±17.2) and 33.8 (±18.8) in group-II, t test 1.65 and p value was highly significant (p<0.001) (Table-2). These findings are more or less in agreement with previous studies.[6-8]

Primary action of Diltiazem is it inhibits the inflow of calcium ions into the cardiac muscle during

ISSN (O): 2687-5365; ISSN (P): 2753-6556

depolarisation. Reduced intra-concentrations increase smooth muscle relaxation resulting in arterial vasodilatation and decreased blood pressure. Diltiazem is well absorbed from Gastrointestinal tract and is subjected to extensive first pass effect giving an absolute bioavailability as compared to intravenous administration.

Diltiazem is a benzothiapine derivative with anti-Hypertensive and vasodialating properties. Approved by 1982 by FDA (It is a member of the non-dihydropyridine calcium channel blocker drug class).[9]

Transradial access to perform diagnostic procedures introduced byCampeau and adapted for therapeutic procedures by kieenij and Laaman.[10,11] It has technological advances such as in the sheaths, guide wires and specific catheters without any aorto-iliac diseases and intense lumbar pain and long stay of hospitalisation consequent cost reduction. Smaller vascular and haemorrhagic complication was observed in access to femoral artery catheterization.[12] The major trans-radial technique problem was radial artery spasm and excessive tortuosity of subclavian artery as compared to aorto-iliac tortuosity but usage of Diltiazem 5mg as bolus has been observed least tortuosity and least vascular complications and haemorrhage.[13] Hence Trans-radial access in coronary catheterization is safer than femoral artery access.

CONCLUSION

Present study suggests that, the use of Diltiazem as an adjunctive drug to isosorbide mononitrate administrated through the trans-radial sheath, decreases the rate of vascular complications because it decreases the incidence of spasms and increases the radial artery diameter with a consequent decrease in its occlusion rate.

This study demands the large number of patients to determine this benefit, so that this technique can replace transfemoral artery access in coronary catheterization.

Limitation of Study

Owing to tertiary location of research centre, small number of patients and lack of latest techniques, we have limited findings and results.

REFERENCES

1. Brasselet C, Tassan S – Randomised comparison of femoral versus radial approach for per cutaneous coronary intervention using abciximb in acute Myocardial infarction. Heart 2007, 93; 1556-1561.
2. Prist pino C, Pelliccia F – Complications in women versus men undergoing percutaneous coronary catheterization using radial versus femoral using Am. J. cardol 2007, 99; 1216-1221.
3. Valgimigli M, Saia F – Registry investigation Trans radial versus trans femoral intervention for acute myocardial infarction JACC cardio vascular Inter 2012, 5; 23-25.
4. Keimeneji F, Laarman GJ, Slagboom T – Out patient coronary stent implantation J. Am. Coll. Cardiol. 1997, 29; 232-7.
5. Hildick-Smith DJR, Lowe MD – Coronary angiography from the radial artery experience complications and limitations Intern. J. cariol. 1998, 64; 231-39.
6. Ludman PF, Stephens NG – Radial versus femoral approach for diagnostic coronary angiography instable angina pectoris Am. J. Cardiol. 1997, 79; 1239-41.
7. Lauvard Y, Lefevre T – coronary angiography through radial or the femoral approach cathet. Cardiol. Inter. 2001, 52; 181-7.
8. He Gw – Arterial grafts for coronary artery bypass grafting biological characteristics, functional classification and clinical choice Ann. Thoracic, Surg. 1999, 67 (1); 277-84.
9. God Graind T – Calcium channel blockers in cardio vascular pharmacy therapy J. Cardiovasc. Pharmacol. Ther. 2014, 19 (6); 501-15.
10. Campeau I –Per cutaneous radial artery approach for coronary angiography cathet. Cardiovasc. Diagn. 1989, 16; 3-7.
11. Kiemenji F, Laarman GJ – Percutaneous transradial approach for coronary stent implantation cathet. Cardio vasc. Diagn. 1993, 30; 173-8.
12. Safian RD, Freedd MS – The manual Interventional cardiology 3rd edition physicians press. 2001.
13. Kiemeneij F, Laaman GJ – Transradial artery coronary angiography Am. Heart J. 1995, 129; 1-8.

ISSN (O): 2687-5365; ISSN (P): 2753-6556