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Rationale of Unfractionated heparin during elective Coronary Angiography

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ABSTRACT

Background: Unfractionated heparin (UFH) has been conventionally used during coronary angiography (CAG). Whether to use unfractionated heparin or not, has been unanswered.

Methods: Hundred patients who underwent CAG through femoral route were assessed. CAG was performed without using unfractionated heparin and embolic or thrombotic event and vascular complications were observed during and after procedure.

Results: The right femoral approach was used in 92% of cases and the left in 8%. Those patients who underwent radial route were excluded. Male (65%) were exceeded the female and smoking (50%) was the major predisposing factor. There were no embolic or thrombotic event and vascular complications such as bleeding, heamatoma, pseudoaneurysm formation, A-V fistula and retroperitoneal bleeding during or after procedure.

Conclusions: Routine elective CAG have shown no significant complication during or after the procedure without UFH.

Key words: angiography, coronary angiography, unfractionated heparin

INTRODUCTION

Coronary artery disease (CAD) remains the leading cause of death in the Western world.[1] An estimated 17.5 million people died from cardiovascular disease in 2007, representing 30 % of all global deaths. Of these deaths, 7.6 million were due to CAD and 5.7 million due to stroke. About 80% of these deaths occurred in low- and middle-income countries. If current trends are allowed to continue, by 2015 an estimated 20 million people will die from cardiovascular disease.[1] It is also becoming the leading cause of death in south Asia and account for 27% of all death in the WHO South-East Asia Region (SEAR).[2] The gold standard test for the diagnosis of CAD is coronary angiography.[3] Unfractionated heparin (UFH) has been conventionally used during coronary angiography (CAG).[4] However, no data is available for the dosage required. Although there have been significant improvements in catheter dimensions, vascular complications are still frequent with the femoral route, particularly in obese patients, aortoiliac disease, or where potent anticoagulants or thrombolytics are used.[5] Such complications result in prolonged hospital stay, increased need for transfusion and also prevent early ambulation.[6] So use of UFH during routine elective CAG may increase the incidence of vascular complications such as bleeding,heamatoma, pseudoaneurysm formation, A-V fistula and retroperitoneal bleeding.

METHODS

This observational study enrolled 100 patients who underwent elective coronary angiography between December 2008 and May 2009 in at Shahid Gangalal National Heart Center, Bansbari, Bansbari. At admission, a standardized data collection form was filled out by the duty physician. Demographic information, CAD risk factors, and clinical signs were collected. Informed consent was obtained in all cases. Local anesthesia consisted of 2% lidocaine injected subcutaneously with

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a 25 gauge needle and using a 22 gauge needle lidocine is introduced into deep tissue planes if needed. A 6F sheath was used in most patients. Vascular sheath was flushed with normal saline after introduction, in between left and right coronary artery catheterization and after completion of the procedure. After completion of the procedure, the sheath was removed immediately, allowing a brisk backflow of blood to expel any clots. Data collection with statistical analysis were done using statistical package for social sciences version 13 for windows.

RESULTS

The right femoral approach was used in 92% of cases and the left in 8%. Those patients who underwent radial route were excluded. Male (65%) were exceeded the female and smoking (50%) was the major predisposing factor (Table 1). Single-vessel disease was predominant (Table 2). The mean procedure time from initial puncture to withdrawal of the last catheter was 20±10 minutes. However, no embolic or thrombotic event and vascular complications were occurred during and after procedure. There was no cerebrovascular accident, myocardial infarction, or iatrogenic left main stem dissection. The majority of patients (90%) were discharged on the next day. Other were kept admitted as they were planed for intervention predischarge.

Table 1. Demographic and Clinical Characteristics in 100 Patients

Variable	Number of patients
Mean age (years)	65 ± 10
Male	68
Female	32
Risk factors	
Smoking	50
Hypertension	40
Diabetes	30
Dyslipidemia	20
Positive family history	5
Indication for angiogram	
Positive stress test	15
Unstable angina	45
Stable angina	10
Postinfarction angina	30
Femoral approach	
Right	92
Left	8%
Previous femoral angiogram	10

Table 2. Angiographic Findings in 100 Patients

Finding	No of Patients
Single-vessel disease	30
Double-vessel disease	20
Triple-vessel disease	25
Non Critical	15
Normal vessels	10

DISCUSSION

Our study didn't find any complication during or after the procedure. However there are reports of extensive analysis of the complications in more then 200,000 patients indicates the following: death 0.2%, myocardial infarction 0.05%, strok 0.07%, arrrythmia 0.5% and major vascular complications less then 1%.[7] So arterial access site bleeding accounts for the majority of complications encountered after cardiac catheterization. Populations at advance age, extreme body habits, bleeding diathesis and those receiving anticoagulant or antiplateles drugs are at greatest risk.[8] Use of heparin during elective coronary angiogram may increase the risk of vascular complications. This was also seen in double-blinded randomized study which was conducted in India by a single operator.[89] Hundred patients were randomized into two groups; patients received 2000 U before CAG and placebo. However, no embolic or thrombotic event occurred in either group. The groin complication was seen in the patient who was randomized to heparin group. In this double blinded randomized study there was no advantage in using UFH.

The main limitation of our study was not having a control group. Therefore a study with larger group preferably with clinical trial would be needed to further support these findings.

CONCLUSION

In this study we did CAG without using heparin and there were no embolic or thrombotic event and vascular complications observed during or after procedure. So based on our findings and previous study we that routine elective CAG may be performed without the use of UFH found to be safe however further detail study is recommended.

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