

Diabetes Mellitus-Management strategies-Coronary Angiogram

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Coronary artery disease is a major cause of morbidity and mortality in patients with diabetes mellitus. There is a significant increase in the use of coronary angiography for the diagnosis and management of coronary artery disease. This method constitutes a gold standard for finding out the presence, extent, localisation and severity of the disease. The "Area of Myocardium" at risk can be estimated.

There are limitations to clinical assessment and investigations like ECG, stress test, thallium, dobutamine echocardiography and stress echocardiogram.

The risks of performing a coronary angiogram are negligible compared to undertaking therapy with incomplete and inaccurate information. The ability of experienced angiographers to perform a safe procedure, physicians philosophy and local results of PTCA or CABG dictate the indications.

Hundred years ago, Claude Bernard performed catheterisations in horses and proved the feasibility of this technique. In 1925, Forssmann performed self catheterisation and walked upto the radiology department with a catheter in the right atrium. In 1959, Sones performed catheterisation by the brachial approach. In 1967, Judkins performed this procedure by the femoral route. Recently, radial artery approach is being used to perform angiography, PTCA or to implant stents at the site of atherosclerotic lesions.

Indications for coronary angiogram include

1. Angina pectoris despite medical management.
2. Unstable angina.
3. Strongly positive stress test.
4. Thallium scan showing evidence of ischaemia in more than moderate area of myocardium.
5. Exercise RNV showing more than 10% fall in ejection fraction on exercise.
6. Significant ventricular arrhythmia of uncertain aetiology.
7. Post-thrombolytic therapy.
8. Post-cardiac transplant surveillance.
9. Abnormal ECG, asymptomatic but stress test positive on routine evaluation (high-risk group professionals-pilots, engine, bus and truck drivers, air traffic controllers).

10. Chest pain with numerous risk factors.
11. Patients undergoing surgery for valvular heart disease.
12. LV dysfunction of uncertain aetiology.

The contraindications to a coronary angiogram are

1. Decompensated CHF.
2. Severe anaemia.
3. Active GI bleed.
4. Recent CVA (<2mo).
5. Advanced non-cardiac disease.
6. Refusal to undergo revascularisation irrespective of severity of CAD.
7. Bleeding diathesis.
8. Advanced physiological age.
9. Digitalis toxicity.
10. Active infection.

The complications of coronary angiography are less in high volume centres, the overall complications being less than 1%. If the mortality is >1 per 1000, the programme should be reevaluated and if it is more than 3 per thousand, the angiography programme should be terminated till the cause is found out. The high-risk group for coronary angiogram include: left main disease, severe triple vessel disease, renal failure, contrast allergy and recurrent unstable angina.

In an analysis of coronary angiograms done in 1 year, 1320 consecutive patients who underwent coronary angiogram for routine indications were analysed in a retrospective non-randomised fashion (Table 1).

Table 1
Analysis of angiograms (n=1320)

	Diabetic (%)	Non Diabetic (%)
Left ventricular dysfunction	15.9	5.8
Single vessel disease	13	22
Two vessel disease	14	17
Three vessel disease	30	24
Left main disease	5	6
Coronary artery bypass surgery	41	26
PTC angioplasty	24	26
Medical management	34	43
Stent	1	4

When the complication rates of procedures were analysed amongst 1502 coronary angiograms, there were no deaths or cerebrovascular accidents, 1 patient had a TIA. There were 3 femoral complications; pseudoaneurysm 1, large haematoma 2.

Amongst the 312 PTCA procedures which included both diabetics as well as non-diabetics, there were no deaths or emergency CABG. However, 24 patients underwent a bailout stent for sub optimal result.

Fifty-two patients underwent an elective and bailout stent without any significant complications in both the groups. These figures probably point to the fact that because of technological advances these procedures are safe irrespective of diabetes.

CONCLUSION

1. The incidence of triple vessel disease is higher in diabetics.
2. Diabetic patients are more likely to require CABG.
3. There is a three-fold increase in the incidence of LV dysfunction.
4. The complication rates of coronary angiogram, PTCA or stent are negligible and are not different in diabetics as compared to non-diabetics.