Coronary angiographic findings in patients with chest pain and right bundle branch block

Ihssan A. Abid*, FICMS (cardio)
Kassim M. J. Al Doori*, (CABM)
Mohammed H. Al Myahi*, FICMS (cardio)

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Summary

Back ground : Coronary artery diseases are not uncommon in the presence of right bundle branch block .

Aim : The aim of this study is to assess the findings of coronary angiography in patients with chest pain and right bundle branch block.

Methods : The study involved review of case sheets and coronary angiography of one hundred patients, who underwent coronary angiography due to chest pain suspected to have coronary artery diseases (CAD) , fifty patients of them had right bundle branch block (RBBB) , the other fifty did not have RBBB , those 100 patients were presented to Ibin Al Bitar hospital for cardiac surgery from January 2004 to June 2006.

History, clinical examinations, electrocardiogram (ECG) , ECG exercise tests (EET) echocardiogram (ECHO) and coronary angiography had been performed.

Results : Mean age of patients was 53± 10.6 years, 84% were male , hypertension, diabetes mellitus, and smoking as risk factors were present as 30%, 32% and 48% respectively. 58% of patients presented with chronic stable angina (CSA) while 42% with acute coronary syndrome (ACS), ECHO showed that left ventricular dysfunction (LVD) was present in 34%, EET was positive in 11 of the 23 patients (47.8%) who were able to perform EET. Normal coronary angiography found in 20% of patients and there were no significant difference in coronary angiographic findings between patients with and without RBBB.

Conclusion : RBBB of indeterminate age has no significant impact on clinical and haemodynamic characteristics of CAD patients and it may be incidental finding**.**

Key words: Right bundle branch block, Coronary artery disease**.**

Introduction :

RBBB is common findings in the general population and many persons with it have no clinical evidence of structural heart diseases, in this group without overt heart diseases, the ECG findings have no prognostic significance (1). EET is one of the most frequent non- invasive modalities used to assess cardiovascular diseases and in patients with RBBB, the new development of ST depression in leads (ll, aVF, V5 and V6) are useful in detecting patients with CAD (2). Detection of wall motion abnormality with echocardiogram can be valuable adjunct in the diagnosis of ischemia in patients who are presenting with chest pain (3).

Coronary angiography used to establish diagnosis and determine prognosis in patients with symptoms or signs suggestive of CAD (4).

The aim of the study is to assess the findings of coronary angiography in patients with chest pain and RBBB.

Department of cardiology, Ibin Al bitar hospital for cardiac surgery, Baghdad., Iraq

Patients and methods

Between January 2004 to June 2006, 50 patients who underwent coronary angiography in Ibin Al Bitar hospital for cardiac surgery for suspicion of CAD due to chest pain when their ECG showed RBBB were studied and compared to 50 control patients who had no RBBB in their ECG.

History, clinical examinations, ECG, EET, echocardiogram and coronary angiography done. Stenosis of 50% or more in left main stem coronary artery (LMCA) and 70% or more in other coronary vessels considered critical (5).Normal LV systolic function was considered when Ejection Fraction (EF) was 50% or more, EF of (40—50%), (30—40%) and (< 30%) were considered as mild, moderate and severe LV systolic dysfunction respectively (6). EETs performed using Bruce protocol (7), the test considered positive when:

1- 0.1 mv (1mm) or greater of J point depression measured from the PQ junction with a relatively flat ST segment slope (< 1mv/sec) , depressed greater than or equal to 0.1mv 80ms after J point (ST 80) in three consecutive beats with a stable base line or :
2- 0.1 mv(1mm) or greater of J point elevation persistently elevated greater than 0.1mv at 60ms after J point in three consecutive beats with a stable base line.

Results

Base line characteristics, Echocardiogram and coronary angio graphic findings shown in table 1. Patients who fulfilled the inclusion criteria were 50 patients, 84% were males; hypertension, diabetes mellitus, smoking and family history of ischaemic heart diseases were present in 30%, 32%, 48% and 46% respectively.

58% of patients presented with CSA, 66% had normal LV function, while significant (moderate or severe) LV dysfunction was present in only 14%.

34% of patients had three vessels diseases. 2% had LMCA diseases, 20% had two vessels diseases, 24% had one vessel diseases and 20 % found to had normal coronary vessels.

Table 2 shows that only 23 patients were able to do the test, 11 of them had positive test.

Table 3 shows no significant differences in coronary angiographic findings between patients with and without RBBB .

Table 1 Base line characteristics, Echocardiography and coronary angiographic findings in patients with chest pain and RBBB

Variables	Number of patients= 50 & (%)
Age (mean±SD)	53 ±10.6
Male	42 (84)
Female	8 (16)
HT	15 (30)
DM	16 (32)
Smoking	24(48)
Family history of IHD	23(46)
CSA	29(58)
ACS	21(42)
Normal LV function	33(66)
Mild LV dysfunction	10(20)
Moderate LV dysfunction	5(10)
Severe LV dysfunction	2(4)
One vessel disease	12(24)
Two vessels disease	10((20)
Three vessels disease	17(34)
LMS disease	1(2)
Normal coronary angio	10(20)

Table 2 :EET were done only in 23 patients who could do test

EET result	Number of patients (23) & %
Negative EET	9(39.1)
Positive EET	11(47.8)
Non conclusive	3(13.1)

Table 3 coronary angiographic finding in patients with RBBB in comparison with those without RBBB

Variables	patients with RBBB No 50& (%)	patients without RBBB N0 50& (%)	P value
Normal coronary Angiogram	10(20)	10(20)	----
One vessel Disease	12(24)	11(22)	0.09
Two vessels Disease	10(20)	12(24)	0.09
Three vessels Disease	17(34)	16(32)	0.18
LMCA Disease	1(2)	1(2)	----
Total	50	50	

Discussion

This is a cross sectional study to asses the significance of RBBB in patients with chest pain suggestive of IHD. Male gender, aging, HT, DM, smoking and family history are very strong risk factors of CAD (8); a fact was demonstrated in this study (table l).

Two thirds of patients had good LV function on ECHO; which is an expected finding because not all obstructed arteries produce wall motion abnormalities, the obstruction may be partial, ischemia may not be present in the resting state and collateral circulations can frequently maintain systolic function despite severe or even total obstruction of the coronary arteries that normally perfuse that area (9). This study showed that 80% of patients had significant CAD and 20% had normal angiograms. This finding is consistent with the fact that 15—20% of patients who present with angina have no significant coronary artery stenosis on coronary angiography (11).

Table (ll) showed that EETs done in 23 patients and were positive in approximately half of the patients; so EET is still useful in the detection of CAD despite decrease in the sensitivity of the test in the presence of RBBB (10).

Table (lll) showed that there were no significant differences in coronary angiographic findings between patients with and without RBBB which supports other studies that had tried to identify a relationship between the extent or location of CAD and the presence of RBBB but had failed (12), this may be due to dual blood supply of the right bundle from septal perforators of both anterior and posterior descending arteries (13).

Conclusions and recommendations

RBBB of indeterminate age has no significant impact on clinical and haemodynamic characteristics of CAD patients and it may be incidental;

Therefore, we recommend that the decision of cardiac catheterization should not be influenced by the presence of RBBB of indeterminate age but rather by clinical judgment and use of non- invasive tests just like patients without RBBB; however, the new RBBB probably has different haemodynamic significance and needs further research to be carefully evaluated.

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