CLINICAL PROBLEMS IN CARDIOPULMONARY DISEASE

Prinzmetal’s Variant Angina

Clinical Evaluation by John A. Kastor, M.D.

Case Summary

Milton Gibson, M.D.

A 64-year-old black man was well until one year prior to admission, when on a routine physical examination, he was discovered to have mild diastolic hypertension. This was satisfactorily controlled with diuretic therapy. Approximately two weeks prior to his admission, he developed intermittent burning dull chest pain which started in the epigastrium and radiated to the jaw. The pain lasted about five minutes, was associated with profuse sweating, and was not related to exertion, emotion, meals, position, respiration or cold air and did not occur at any particular time of the day. The pain did respond to nitroglycerin in less than one minute. He had about eight or nine episodes of pain and on three occasions he had an associated syncopal episode. There were no symptoms suggestive of congestive heart failure.

Results of physical examination on admission as well as of his electrocardiogram were normal. During an episode of pain, on a rhythm strip, he developed ST segment elevation and complete heart block with a junctional escape rhythm of 40 beats per minute. These changes disappeared shortly after cessation of pain. He also developed frequent premature ventricular contractions during pain and on two occasions he developed ventricular fibrillation which was successfully converted with electric countershock. On the basis of the history and the transient ST segment elevation induced by the pain, he was considered to have Prinzmetal’s variant angina.

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Questions

1. Should this man have coronary arteriograms performed?
2. What type of coronary lesions, if any, would you expect coronary cines to show?
3. If coronary arteriograms are performed and favorable lesions are found, should he be considered for any type of surgery in an effort to relieve pain, possibly prevent myocardial infarction or possibly prevent heart block by increasing perfusion of conduction tissue?
4. Should a permanent demand transvenous pacemaker be placed?
5. In view of a recent article suggesting propranolol (Inderal) may be useful in Prinzmetal’s variant angina, should he be placed on longterm propranolol?
6. In view of the frequent premature ventricular contractions and two episodes of ventricular fibrillation during pain, should he be placed on longterm suppressive therapy such as quinidine or procainamide hydrochloride (Pronestyl)?

References


Comments by
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I suspect that most cardiologists presented with the case history of this man would recommend that coronary arteriography be performed in order to decide whether the patient is a suitable candidate for bypass surgery. He has both of the potentially lethal arrhythmic complications described in patients with variant angina: ventricular irritability and heart block, and would probably have died from ventricular fibrillation if the episodes had occurred elsewhere than under optimal monitoring facilities. There is good clinical evidence that revascularization can relieve patients of dangerous ventricular irritability when this occurs in the presence of coronary disease and without the characteristic clinical picture of variant angina. I therefore favor the surgical approach over medical treatment in this case particularly because of the dangers from the arrhythmias.

Whether the patient will have surgically treatable coronary lesions is another question. Fortunately the coronary anatomy in most patients with both variant angina and the more "classical" anginal syndrome is suitable for bypass. The high incidence of single vessel disease in variant angina has been emphasized, and such patients are especially attractive candidates for operation from the point of view of operative mortality if none other. However, a few patients with variant angina have apparently normal coronary arteries without significant occlusions. Such was the case with the well-known patient reported by Whiting and associates1 and she had serious ventricular irritability and heart block as well. I know of no definite way to predict before catheterization whether treatable lesions will be found in this man. "Playing the odds," I would select a single proximal coronary lesion as most probable with multivessel disease or "normal" coronaries as less likely possibilities.

If the coronary lesions are such that an operation cannot be performed, then propranolol plus other antiarrhythmic drugs as needed are indicated. A demand variable rate pacemaker set to discharge at about 50 per minute might also be a realistic treatment effort. (The slow pacemaker rate is advised because the sinus rate will almost surely decrease from the propranolol. Pacemaker rhythm is only needed to protect the ventricles during periods of A-V block.)

If bypassable lesions are found, as is usually the case, I certainly recommend that operation be performed and preferably soon after the study in order to reduce the possibility of a calamity occurring between angiogram and surgery. The procedure should: 1) relieve angina; 2) eliminate the heart block; 3) stop the ventricular irritability. Whether it will prevent an infarction is the question which plagues us all at this time. I don't know the answer to that one yet, although quite frankly I think it probably does (but that's not for publication!)

After the operation is performed the patient should be observed on continuous monitoring for an extended period of time. If no A-V block is noticed, a permanent pacemaker need not be installed. Since the A-V block is predominately A-V nodal (junctional escape rhythm) the likelihood of reversibility is high. (Incidentally the surgeon might be well advised to insert at the operation permanent epicardial ventricular electrodes which could be buried subcutaneously and be available for attachment to a permanent pacemaker if such treatment is indicated later.)

I know of no proof yet that prophylactic propranolol or other antiarrhythmic therapy is helpful in patients with classical or variant angina after successful bypass surgery which relieves the pain and the arrhythmic complications. Of course it is essential in a case like this to perform exercise testing after recovery from the operation. Ventricular irritability is much more likely to be found when such stresses are applied.2 However, in planning longterm drug treatment, if irritability is documented after operation, we must keep in mind that little firm evidence is currently available which shows that patients with ventricular irritability and coronary disease live longer when treated than when untreated with chronic antiarrhythmic therapy. Despite these provisos, my inclination would be to suppress ventricular irritability in such a patient.

References

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