

'I Prefer the CCU for My MI Patients'

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produces marked ST elevations within 24 hours and is followed by a flattening and inversion of the T waves and by development of Q or QS waves due to transmural necrosis of the myocardium. Very tall T waves may sometimes be first noted, minutes to hours after the onset. This pattern is the usual one in younger people.

The second involves progressive inversion of the T waves with no QRS changes, indicating that complete transmural infarction has not occurred. Elevated ST segments may be recorded initially, followed by deeply inverted T waves. Symmetrical, deeply inverted T waves in one or more precordial leads may also indicate subendocardial infarction in the anterior or lateral wall of the left ventricle. Such deep inversion may last for weeks or months before the T waves gradually improve.

The third ECG pattern consists of progressive ST depressions, usually greater than 1 millimeter, and slight T wave inversions in the limb and precordial leads, suggesting subendocardial infarction.

In my experience, more elderly patients with MI fall into the latter two patterns.

Very often, an acute arrhythmia may be due to acute MI (see ECGs on page 7.)

Q—What ECG features might be ambiguous?

A—The PR interval is usually a little longer in the elderly. A 0.22-second interval may be perfectly normal in a 80-year-old, whereas in a 50-year-old it's a little prolonged at a heart rate of 100 or less. T waves may be low or flat in older people without really being abnormal.

Q—Why is this?

A—There may be fibrosis, for instance, and I don't think this would be indicative of reduced coronary blood flow per se. Also, a fair amount of coronary artery disease involving several arteries is generally present, whereas in younger people only one artery may be affected, and this, too, may influence the ECG

tracing and its interpretation.

Q—Are the same areas of the heart affected in the elderly patient with MI as in the younger one?

A—I don't know of any evidence suggesting this. But the older person may have developed a certain amount of collateral circulation over the years, and occlusion in one artery may be mistaken on ECG for occlusion in another one. Postmortems show that you can't diagnose the exact location of the MI from the ECG in older patients because of this alteration.

Q—In confirming the diagnosis of MI in the hospital by enzyme determinations, are there any age-related factors that might influence the classic criteria?

A—In general, the same criteria can be applied to all patients, but it is interesting to note that in older individuals the amount of enzymes in the heart may be decreased. Studies have shown this to be true of lactic dehydrogenase in particular.

On the other hand, the clinician should guard against making a diagnosis of myocardial infarction because the CPK level is high in the absence of other enzyme changes. Simply giving the patient an intramuscular injection may produce a significant rise in CPK levels.

Q—What is the reason for the small enzyme rises?

A—First, a collateral circulation may have developed; also, the older patient's heart is generally smaller and its intrinsic amount of enzyme may be reduced. Of course, the changes will still be very great in the patient with an overwhelming infarction and extensive damage.

Q—Turning to treatment, what guidelines would you give for hospital management of the elderly patient?

A—The first question that comes up—and it's a controversial one—concerns where in the hospital the older MI patient should be treated. I prefer that my own MI patients—

regardless of their age—be treated in the coronary care unit. The incidence of complications is high in older patients, and I feel CCU treatment is particularly important for them because of the monitoring facilities available there. One can't afford to wait to initiate treatment as one can, to some extent, in younger individuals in better physical condition.

Q—What concomitant conditions are most likely to complicate treatment?

A—As I have said, the incidence of arrhythmias is very high in older people, and this makes the elderly MI patient a particularly poor risk. These arrhythmias should be detected early and treated promptly. Second, of course, is the problem of congestive heart failure, which must always be expected in such patients; again, it must be detected early and treated vigorously. And third, there is shock.

Q—What are your guidelines in administering medication to older MI patients?

A—The first thing to remember is that older people are likely to have a chronic insufficiency of the detoxifying organs, so they're more prone to develop idiosyncrasies toward various medications. Generally they should receive lower doses than younger persons.

Q—What do you usually give these patients for pain?

A—I use meperidine or morphine, although the elderly are more sensitive to these medications and should be watched closely. What might be considered a normal dose for a younger patient may lead to respiratory depression, hypotension or urinary retention in the elderly. Another point to remember is that if morphine is given alone, it may cause nausea and vomiting, adding another burden to an already injured myocardium. But severe pain usually can be relieved by injecting 50 mg meperidine—or more if it's found necessary—or 8 mg to 10 mg morphine with atropine.

Q—Do you recommend the use of oxygen?

A—It may be useful to relieve anoxia. However, in the older patient it should be given nasally instead of in an oxygen tent. A tent often alarms the older patient and causes him to become confused and disoriented.

Q—What measures do you advocate to control arrhythmias?

Prompt Action Held Crucial in Acute Aortic Dissection

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progressed the entire distance and, as in the control group, one showed no progression at all. The other five showed progressions of 58, 55, 54, 50 and 36 percent. There was no change in the animals' systolic pressure, but myocardial contractility had been significantly depressed in these dogs by the administration of propranolol prior to the procedure.

Trimethaphan Preferred

In contrast, said Dr. Cleveland, none of the trimethaphan-treated animals demonstrated progression of aortic dissection upon sacrifice. Their aortic systolic pressure, which initially averaged 185 mm Hg, dropped to less than 90

mmHg before the surgical procedure and remained there during the 60-minute observation period, while their myocardial contractility decreased from a control value of 1,275 mm Hg/sec. to 890 mm Hg/sec.

In a clinical situation, the Tufts researcher noted, the propranolol dosage used in his studies would be considered excessive and the significant depression of myocardial contractility observed in the dogs thus might not be duplicated. However, he added controlled hypotension to the 90 mmHg level is readily achieved in humans by the trimethaphan doses used in the experiments.

Associated with Dr. Cleveland in this investigation were Drs. Wilfred I. Carney Jr. and Harold F. Rheinlander. Their complete report is published in *Surgery* 78: 114-20, 1975.

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