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Management of unstable angina in a rural hospital: quality-of-care assessment by explicit criteria

Gordon Brock, MD, CCFP
Vydas Gurekas, MD, CCFP
Nathanaelle Theriault, MD

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This study reviewed the quality of care given to 30 patients who had a diagnosis of unstable angina and who were admitted by family physicians to a 9-bed rural hospital during the period 1998 to 2000. The methodology of how to perform a "quality-of-care assessment by explicit criteria" in the rural environment is explained. The conclusion was that the management of the majority of patients admitted to a rural hospital by family physicians with a diagnosis of unstable angina met appropriate criteria for quality of care.

Cette étude a examiné la qualité des soins dispensés à 30 patients atteints d'angine de poitrine instable diagnostiquée et hospitalisés par des médecins de famille dans un hôpital rural de neuf lits entre 1998 et 2000. Les auteurs expliquent la méthode d'«évaluation de la qualité des soins par critères explicites» en milieu rural. Ils concluent que la prise en charge de la majorité des patients atteints d'angine instable diagnostiquée et hospitalisés dans un hôpital rural par des médecins de famille répondait aux critères pertinents.

Introduction

The Collège des médecins du Québec defines "quality" as "the characteristic of the medical act which alters the natural evolution of the state of health through application of scientific principles in response to the patient's expectations."1 Rural-specific concerns about quality-of-care assessments include the following.2,3

- A lack of rural-specific guidelines and standards of care. Additionally,

shortages of physicians may make it difficult, at times, to meet even such "rural" standards, should they be developed.

- Deciding which medical problem to study for an albeit expensive and time-consuming "quality-of-care assessment" may be problematic, due to the wide range of problems treated in most rural institutions.
- A smaller and therefore less anonymous medical staff makes a quality-of-care assessment appear more threatening to individual physicians.
- The smaller numbers typically seen in rural general practice make "evaluation by outcome measures" (e.g., mortality after myocardial infarction [MI], perinatal mortality) difficult to interpret.

"Unstable angina" comprises a group of diagnoses that form a spectrum "intermediate" in severity between chronic, stable angina and acute MI (Table 14). In 1995, a group of Canadian cardiologists5 estimated that there were 75 000 hospitalizations yearly in Canada for this condition, with principal complications including progression to MI, left ventricular failure, arrhythmia and sudden death. Risk of early death was stated to be 5%, compared with 1% for chronic stable angina and 23% for acute MI.5

Several studies have looked at quality of care for patients admitted to hospital with unstable angina, mostly from an urban hospital point of view. A Connecticut study6 reported that during 1993-94 an ECG had been obtained within 20 minutes of arrival at hospital for only 43% of patients with unstable angina, and a North Carolina study of 16 hospitals reported that 43% of patients with unstable angina had an initial ECG obtained within the first hour.7 Current treatment recommendations stress initial aggressive treatment with antiplatelet and anti-anginal medication and monitoring for complications. Angiographic assessment is recommended for refractory or complicated cases.4,8 Reported compliance rates for administration of aspirin (acetylsalicylic acid [ASA]), heparin and beta-blockers to patients admitted with a diagnosis of unstable angina have ranged from 82%-98%, 19%-86% and 19%-76% respectively.6,7,9-12

There has been very little published data on quality of care in rural hospitals. We present our data both as an evaluation of rural quality of care and to acquaint rural physicians with the methodology of such evaluation studies.

Methods

We annually select one medical condition for "quality-of-care assessment by explicit criteria." For our 2000 study we evaluated patients admitted to hospital with a

diagnosis of "unstable angina."

Our 9-bed rural hospital, which has a 24-hour emergency department, serves a catchment area of 5000 people. Cardiac patients admitted to hospital are cared for and monitored on a general ward by general duty nurses. One-on-one nursing is available on physician request. Electrocardiography and serum troponin I are available 24/7.

The nearest hospital providing internist consultation and full cardiac care unit facilities is North Bay General Hospital, 70 km (45 minutes) away by road. The nearest hospital with a cardiology service is Sudbury General Hospital, 160 km distant. The province of Quebec funds a telecardiology service, whereby a cardiologist in Montreal is funded to provide a 24-hour telephone consultation service.

Methodology of "quality-of-care assessment by explicit criteria"

Quality-of-care assessment by explicit criteria assesses whether defined criteria believed to be indicative of "quality" were met during a patient's care, usually by chart review. This contrasts with "quality control by outcome measures," where information such as the mortality after thrombolysis or number of influenza cases after a vaccination campaign would be measured.

The criteria chosen should be reviewed with all members of the medical staff whose care will be evaluated, and, if possible, a consensus should be reached. We believe this is necessary to ensure acceptance of any recommendations.

A medical student (N.T.) was hired on a 7-week grant to conduct the study, and a Medical Evaluation Committee, which included the medical student and a senior physician (G.B.), was set up. From June 5-16, 2000, after reviewing the medical literature4,8 and consulting with the entire medical staff, inclusion and exclusion criteria, along with explicit quality-of-care criteria (Table 1 and Table 2), were elaborated. These criteria were chosen as the minimum necessary for high-quality care to have been given, and only "as [among] those having scientific recognition, on which there is a reasonable consensus of expert opinion."1 Criteria were

- as objective as possible;
- rural-specific, taking into account the resources available locally, patient expectations and usual referral patterns; and

- could be reliably ascertained by chart review.

The charts of all patients admitted to our institution for more than 6 hours with a diagnosis of "unstable angina" between Jan. 1, 1998, and June 1, 2000, were obtained from the Medical Records Department. In addition, the emergency department logbook was reviewed for patients who presented with "chest pain" or "unstable angina" to ensure that any patient whose diagnosis was changed after admission was included in the review. Thirty-nine charts were chosen for assessment by the Medical Evaluation Committee.

Findings of the Committee were submitted to the medical staff and hospital board in the fall of 2000. It has been our policy not to break down the cases by treating physician in the final report to preclude physicians' concerns about being singled out or treated unfairly.

The quality-of-care study was followed by teaching a remedial action, as indicated, as an example of the effectiveness of this approach. In the case of unstable angina, Iliadis and coworkers10 found that "a Medical Grand Rounds to inform [physicians] of the AHCPR [Agency for Health Care Policy and Research] guidelines on unstable angina" and "a two-page reminder posted in the charts of all patients admitted with unstable angina produced objective improvements in care and outcome of patients admitted to their tertiary care urban medical center."

Results

Thirty-nine charts of patients admitted to our hospital with unstable angina between Jan. 1, 1998, and June 1, 2000, were reviewed retrospectively. Nine were excluded from further review for the following reasons: the criteria used for the diagnosis of "unstable angina" were not clearly stated in the physician's notes (2 patients); the patient was transferred after less than 6 hours in our institution (2); the time of arrival or of the diagnosis of unstable angina was not clearly stated (2); and advanced end-stage cardiac disease or significant comorbidity was present, and these patients were managed by pre-set criteria, usually "symptomatic care only" as elaborated by their physician and specialist (3).

Nineteen patients were admitted once, 1 patient was admitted twice and 3 patients were admitted 3 times each, for a total of 30 different admissions for unstable angina in 23 patients.

Patient demographics

Eleven patients were men (mean age 72, range 54-77 yr) and 12 were women (mean age 72, range 48-98 yr). Prior to admission (or the first admission for those patients admitted more than once), 18 of the patients were known to have had angina. Of these 18, 5 had already had an MI. Two other patients had had an MI but were without active angina since the MI. Thus, 20 of the 23 patients had established ischemic heart disease. Three patients were not known to have had ischemic heart disease prior to admission, although one had hypercholesterolemia and another had diabetes.

Two of the 23 patients were past smokers, 3/23 were current smokers and 5 were nonsmokers. There was no note regarding the patient's smoking status in the charts of the remaining 13 patients.

Presentation

Relating to the admissions of patients with unstable angina (Table 1), 25 admissions were for a worsening of pre-existent angina, so called "crescendo angina." Pre-hospital rest or decubitus attacks were noted in 9 of these patients. Three patients presented with new onset of angina to either Canadian Cardiovascular Society Level III (2 patients) or rest angina (1 patient). There were 2 other patients who had an MI 5 years and 1 year prior to the admission, but who had had no angina since their MI. In 1 of the 25 patients admitted with "crescendo angina" a non-Q-wave MI had developed by the second day of admission. (Non-Q-wave MI is classified as an "intermediate syndrome" because it is identical in presentation to unstable angina.5)

In-hospital course

Twenty-two (73%) of the patients were treated locally and discharged home. Six were transferred to a secondary care hospital — 5 during the first 24 hours, the sixth on the second day of admission. Two patients were transferred to a tertiary cardiology centre — 1 on the first day of admission, the second on the seventh day.

There were no deaths in our hospital. One patient, a 71-year-old woman with a positive troponin level, died after transfer to a secondary care hospital.

Compliance with the explicit criteria

Compliance with our explicit criteria is indicated in Table 3. Overall, compliance rates ranged from 60%-100%.

Compliance rates for diagnostic testing included an ECG obtained within 20 minutes of arrival in 70% of cases. Median delay for all cases was 16 minutes (mean 23.3 ± 28 min). The mean time for obtaining the second ECG was 4 hours 40 minutes after arrival at the hospital. In 86.7% of the cases a third ECG was obtained within 24 hours of admission, and 86% of the patients had a second set of cardiac enzymes measured within 24 hours of admission (mean time 16 h 29 min after arrival).

Serum troponin I was measured in only 60% of patients. In all but 1 case at least 6 hours had passed from the onset of the pain to the measurement. (In hindsight, this criterion should have been "Cardiac troponin I measured at least once, at least 6 hours after onset of the chest pain.")

In 19 of 30 cases there was a documented telephone consultation between the admitting physician and a specialist during the patient's hospital stay: in 12 cases, with the telecardiologist (6 of these within 24 hours of admission), and in 7 cases, with an internist at North Bay General Hospital. Six patients were transferred to North Bay General Hospital, all but 1 within the first 24 hours.

ASA was begun on admission in 23/30 patients. Reasons for ASA being withheld included allergy (2 patients) and taking H2-blockers (2) or omeprazole (2). One patient was taking enteric-coated ASA prior to arrival, and this was apparently not given during the admission, for unknown reasons.

Heparin was started in 26/30 (86%) of the patients. Of the 4 patients in whom heparin was not administered, 1 was already on Coumadin. In the remaining 3 patients it was not clear why heparin was not started. In 2 of these patients, there was no documented telephone consultation with a specialist, leading us to assume that the decision not to begin heparin was solely that of the attending physician. Two of these 26 patients were transferred during the first 24 hours, but of the remaining 24 patients, 21 were kept on heparin for 2-5 days. There was 1 withdrawal of consent to give heparin, and 2 patients were kept on heparin for 7 and 11 days.

In our rural hospital all patients received on admission at least 1 anti-anginal drug from 1 of 3 classes (i.e., beta-blockers, calcium-channel blockers, long-acting nitrates). Fourteen of 28 were already on a beta-blocker at the time of admission, and a beta-blocker was given to 7 more, resulting in 21/30 (70%) of all patients receiving

a beta-blocker.

Discussion

Our rates of administration of heparin and beta-blockers compared well to the rates in published reports (Table 4). Our rate of ASA administration fell below that of other studies, however. We do stress that comparison between these studies may be difficult due to differences in patient profiles and degree of familiarity with now standard recommendations.

In our institution, potential areas for improvement included the following.

1. Prompt teleconsultations with a cardiologist during the first 24 hours should be done in a greater percentage of cases to confirm the diagnosis, aid in risk stratification, formulate a treatment plan and agree on guidelines for referral.4,5,8
2. Troponins appear to have been underused, as they carry important short-term predictive value.8,13 (Part of this underuse might be explained by the fact that troponins were introduced here only in January 1998 and thus were a new technology for much of the study period.)
3. A clear risk stratification should be incorporated as part of the treatment plan.5
4. Our compliance with ASA administration must be improved. Consultation (as in #1) may be needed to determine the risk-benefit ratio of ASA for patients with gastrointestinal disease. As well, ticlopidine or Plavix (clopidogrel) should be considered when true contraindication to ASA exists.4
5. More attention should be paid to making daily medical progress notes on these potentially unstable patients.

Limitations

Weaknesses of this type of study include the retrospective nature of the data collection. Some admissions of patients with unstable angina may have been missed when the diagnosis was changed to unstable angina after admission for another problem and then coded as a third problem on discharge. No mortality or morbidity data are available on the (presumably sicker) patients who were transferred within 6 hours of arrival at our hospital. Furthermore, the design of the study makes it impossible to be sure of the accuracy of the admitting diagnosis of unstable angina: the possibility exists that some of the 30 patients might have had non-cardiac chest

pain.

As discussed previously, this was an analysis of the "quality of care," not of "outcome" or of the diagnostic acumen of the physicians. Therefore this study cannot be inferred to mean that treatment of unstable angina is "safe" in rural hospitals. We believe the results do indicate that physicians in a rural hospital can satisfactorily adhere to proper guidelines in the treatment of unstable angina.

Conclusions

The results show that the management of the majority of patients admitted by family physicians to a rural hospital for unstable angina met appropriate criteria for quality. Larger studies are needed to further investigate the safety of treatment of unstable angina in small rural hospitals.

Gordon Brock, MD, CCFP, Staff physician, Temiscaming Centre de Santé, Temiscaming, Que., Assistant Professor, Department of Family Medicine, and Lecturer, Department of Anaesthesia, McGill University, Montréal, Que.; Vydas Gurekas, MD, CCFP, Director of Professional Services, Temiscaming Centre de Santé, Temiscaming, Que., Lecturer, Department of Family Medicine, McGill University, Montréal, Que.; Nathanaelle Theriault, MD, Family medicine resident, University of Sherbrooke, Sherbrooke, Que.

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Correspondence to: Dr. Gordon Brock, Temiscaming Centre de Santé, CP 760, Temiscaming QC J0Z 3R0

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