Student Attitudes about Surgery in Older Patients Before and After the Surgical Clerkship

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Although emphasis has been placed on including content on treating the elderly in the medical school curriculum, little attention has been given to whether content on surgical management of the elderly should be provided in the surgical clerkship. The purpose of this paper is to describe geriatric principles emphasized in a surgical clerkship and changes in attitudes of students. Junior students (N = 175) were tested on attitudes before and after the clerkship. Attitudes about treating the elderly and surgery in the elderly changed significantly and positively. Attitudes about emergency surgery in the elderly became more realistic, particularly in those selecting surgery as a career. This study differs from others that found that students became more negative about treating the elderly as they progressed through medical school. The surgical clerkship provides a different perspective of the older patient from that seen on medicine or in long-term care, in that the elderly are usually admitted and treated successfully in a short time. The fact that the surgical clerkship, in contrast to other medical school experiences, can positively influence attitudes about aging for all students, regardless of career choice, is encouraging and suggests that including content on surgical management of the elderly can help students become more favorable about treating older patients.

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MUCH HAS BEEN WRITTEN about the need to prepare medical students to treat the elderly and deal effectively with their medical problems.[1-3] In 1978, the Institute of Medicine, after a comprehensive study, recommended that medical education in geriatrics be integrated throughout the curriculum.[4] There have been isolated attempts to meet these objectives in medical schools. Most of the efforts, however, have been focused on providing information about the specific psychosocial and medical needs of the elderly or on trying to change stereotyped attitudes about old people. Curricular input on aging usually has occurred during the preclinical years in courses such as introduction to medicine or as part of the clinical years in clerkships such as family medicine, internal medicine, or psychiatry. Little attention has been given to whether content about surgery in the elderly and attitudes about operating on the older person should be included in the surgical clerkship. Yet, there has been a long history of studies in surgical outcomes of older patients as well as an accumulation of wisdom about their surgical care. In a review of 108 reported studies of surgery in the elderly, we[5] found variations in mortality rates but a general consensus that older patients who had elective surgery had comparable outcomes to those of younger patients. The major risks appeared to be from emergency surgery often performed in the elderly and from coexisting disease that was greater in older patients than in younger patients.

The purpose of this paper is to describe geriatric principles emphasized in a surgical clerkship and changes in attitudes of junior medical students about surgery in the elderly after their surgical rotation.

Surgical Geriatric Principles

A half century ago, most surgeons took a cautious approach to operating on the elderly in the belief that older age *per se* carried increased surgical risk. Yet, even in the late 1930s, some surgeons had begun to question whether this opinion was entirely justified. Fifty years ago, Rankin and Johnson[6] concluded "experience has shown that old age is no longer the contraindication to surgery that it was at the beginning of the century, and more and more data are being accumulated to substantiate this fact." There is no doubt that age is, however, still a factor in

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the surgical decision process. At either extreme (readiness or reluctance to operate), increased knowledge about aging and the older person's response to surgery can provide a basis for making more appropriate decisions.

Operative risk in the elderly is complex. It is well known that emergency surgery for all ages carries a greater risk than operating electively for the same disease. In addition, coexisting disease increases with age and must be assessed carefully in regard to additional risk. Thus, increased surgical risk with age can be attributed in part to multiple pathology, more advanced diseases, and more frequent emergency surgery. At the same time, biologic variability increases with age. Although some elderly individuals fit the stereotype of the "frail elderly," more of the elderly do not. Function of various organs and the general adaptability of the body changes at differing rates in different individuals. In terms of reserve and experience with illness, there are indications that many individuals who live into extreme old age are more biologically elite and have been more physically resistant to illness.[7,8] Age does, however, take its toll, and some physiologic changes occur with normal aging, such as renal function, glucose tolerance, cardiac output, vital capacity of the lungs, lean muscle mass, and cellular immunity. Many other functions, however, do not change. For example, laboratory tests, such as hematocrit, serum electrolytes, and urinalysis, are not influenced by age in clinically important ways, and a treatable disease may be overlooked if an abnormal finding on such a test is attributed to old age alone.

A positive aspect of surgery in the elderly is often the age of the patient, in that older patients are survivors. Some might assume that once a person reaches the age of life expectancy that little effort needs to be made to extend life. Survival to an advanced age, however, predicts more survival. Life expectancy at birth is 71.9 years, at 65 it is 15.6 more years, at 75 it is 9.8 years, and even at 80, it is 7.6 years. Wangensteen believed that no patient who required a life-saving operation should be permitted to die simply because of chronologic age.[9] Anyone who gets past the killer diseases of middle age and early old age has demonstrated durability and resilience. The trends in surgery, documented by numerous studies, suggest that good results can be obtained in operating on the elderly when they are managed properly. Oschner[10] said it best: "In 1927, as a young professor of surgery at Tulane Medical School, I taught and practiced that an elective operation for inguinal hernia in a patient older than 50 years of age was not justified . . . Today, age is in no way a surgical contraindication."

At the same time that surgeons should not be reluctant to operate on the elderly when surgery is indicated, the heroic measures to extend life through surgery for patients who are terminally ill is a slightly different issue. Sometimes this is done without enough thought as to whether the result will enhance the overall quality of life left to the individual. Surgery may in fact make the time left less rewarding. Glenn[11] suggested that operations in the elderly could be classified as those expected to result in complete restoration of health, those aimed at diminishing disability, and those aimed at achieving a limited postponement of inevitable death. When considering operations that postpone inevitable death, the chance of improving quality of life, as well as survival, should be evaluated carefully.

With this philosophy as background, information on the surgical management of the elderly patient is provided to students through assigned readings, study questions, and supervision in clinical situations. It is emphasized that principles of good surgical care are not specific to the elderly, but apply to patients of all ages. In this sense, elderly patients are not different from the young, but rather have accumulated, in some instances, more age-related change and disease that must be considered. Surgical management is divided into preoperative, operative, and postoperative periods. Preoperative assessment is stressed as the most important of the three, with careful assessment and planning in this stage leading to avoidance of later problems. Steps covered are assessing the older patient comprehensively, treating systems that can be improved before surgery, estimating the risk for development of emergency surgery (with an eye toward preventing and correcting surgical problems that might lead to an emergency operation), keeping the patient mobile and out of bed as much as possible, and preparing the patient for postoperative events. In the operative management stage, there is less to do that is influenced by the age of the patient. Students are taught that the surgeon needs to work closely with the anesthesiologist to plan the operation with a view toward possible problems and avoiding overtaxing the patient. Care with handling the tissue is always important, but even more so in older patients who have a reduced vascular supply and a diminished ability to heal and regenerate after surgery. Students are cautioned that the postoperative period can be a time of increased risk. The surgeon may be intent on getting the older patient through the ordeal of surgery safely and may be so relieved that the patient did well that attention is relaxed. During the postoperative stage, vital signs of the older person need to be checked frequently, extremes of therapy should be avoided, signs of mental confusion need to be monitored, and activity and rehabilitation should be initiated as early as possible.

The objectives of including content on surgical management of the elderly in the surgical clerkship were that students would recognize that older people are variable, that emergency surgery presents a higher risk among the old than in the young, that good preoperative preparation and postoperative attention can reduce the risk of surgery in the elderly, that with such attention good surgical results

are often comparable to that of younger patients, and that chronologic age is not a contraindication to surgery.

Method

One hundred seventy-nine junior medical students were tested before and after the 12-week surgical clerkship on their attitudes about surgery in the elderly. Two methods of measuring attitudes were used. A 22-item scale was developed based on the principles described above and from existing scales that measured attitudes toward old people in general. Items were rated on four-point strongly agree to strongly disagree scales. Some items were stated in negative terms to avoid an acquiescence response set. In developing the scale, the responses of 80 students were submitted to a varimax rotation factor analysis and three factors were extracted. The first factor measured a general attitude toward old people (items such as "are pretty much alike," "are very relaxing to be with," or "get set in their ways and are unable to change"). The second factor assessed the attitude about treating the elderly ("are more difficult to work up," "have less interesting medical problems," or "complain more than younger persons about their symptoms"). The third factor described an attitude about operating on the elderly (such as "are greater operative risks for emergency surgery than younger patients," "should have surgery delayed as long as possible in order to avoid unnecessary problems," and "should probably only have surgery as an emergency procedure").

Attitudes about four concepts were also measured, using the semantic differential technique of Osgood et al.[12] Seven bipolar adjectives were selected from the evaluative factor proported by Osgood to measure an attitude dimension. Adjectives such as "safe-dangerous," "optimistic-pessimistic," "useful-useless" were rated on seven-point scales and summed for the four concepts: Geriatrics, Pediatrics, Elective Surgery in the Old, and Emergency Surgery in the Old. In addition, on entry into the clerkship, students were asked if they had been exposed to content on aging previously in the curriculum and whether they had been involved in working with the elderly previously. Lastly, they were asked to select an age at which they would classify individuals as belonging to an "older" group, if they were doing a research study.

Students also provide their career preferences before and after the clerkship. Information on age, sex, and quarter of the academic year that surgery was taken was used in the analyses.

Data were analyzed in a 2×2 factorial design for multivariate analysis of variance where one of the factors was time (before and after the surgical clerkship) and the other factor was career preference at the end of the clerkship (surgery *vs.* other choices). The three factor scores describing attitudes and the four attitude scores on the semantic differentials were compared between these groups. In addition, age, sex, quarter of the year, and responses to the three questions at pretest were correlated with the attitude scores.

Results

One hundred seventy-nine students were pretested when they entered the clerkship and 175 were post-tested at the end of the rotation. Data were analyzed for the 175 students who had both ratings. A total of 35 students selected surgery as their career preference at the end of the surgical clerkship. The majority of the class (81%) said they had been exposed to problems of the elderly in prior courses during medical school. About one half (46%) reported that they had had some experience working with the elderly either in medical encounters, research, or special projects. In response to the question concerning when they would classify an individual as "elderly" in a research study, the average age was 66.2 years with a standard deviation of 6.4 years. No differences were found between students who did and did not select surgery as a career preference in regard to previous content about aging, experience with elderly, or age at which one was old.

Attitudes Before and After the Clerkship in Surgical and Nonsurgical Choice Students

Table 1 shows the mean scores on the three attitudes measured by the agree-disagree type statements as well as the mean responses on the four semantic differentials before and after the clerkship for the surgical and nonsurgical choice students. In regard to changes before and after the surgical clerkship, attitudes toward old people in general did not change significantly and was in the relatively positive range of the scale. Attitudes about treating old people became more favorable by the end of the clerkship ($P < 0.01$) and attitudes about operating on the elderly became more favorable ($P < 0.001$) as well.

Attitudes about Geriatrics and Pediatrics, as a profession, became less positive over the 12 weeks of the clerkship at the 0.001 levels statistically. Attitudes toward doing elective surgery in the elderly did not change significantly. Attitude about doing emergency surgery, however, became more negative after the surgical clerkship.

The potential surgeons in the class differed significantly from the other students on only two of the seven attitudes. The surgical choice students were less favorable than the rest of the class about pediatrics and were even less positive than others in regard to emergency surgery in the elderly.

Discussion

The study demonstrated that changes in attitudes occurred after the clerkship. Furthermore, the attitudes about treating old people and surgery in the elderly were more positive at the end of the clerkship than they had been at the beginning. This seems likely to have resulted

TABLE 1. *Comparison of Attitudes in Surgical and Nonsurgical Choice Medical Students before and after the Surgical Clerkship**

Attitudes	Pretest		Post-test		F-Ratios		
					Main Effects		
	Surgical (N = 35)	Nonsurgical (N = 40)	Surgical (N = 35)	Nonsurgical (N = 140)	Time	Surgery	Interactions
Attitude factors							
Toward old people	26.1	26.7	27.1	27.0	1.9	0.2	0.7
Treating old people	10.0	10.1	10.5	10.6	6.4‡	0.1	0.0
Surgery in elderly	21.8	22.4	23.6	23.7	19.4§	1.0	0.4
Semantic differentials							
Geriatrics	20.5	20.6	25.1	23.2	20.1§	0.9	1.4
Pediatrics	17.5	16.4	22.9	18.4	16.7§	9.9‡	4.9†
Elective surgery in the elderly	22.6	22.4	22.5	22.3	0.0	0.0	0.0
Emergency surgery in the elderly	22.2	23.4	27.3	25.7	20.3§	0.1	3.0†

* Higher scores on attitudes toward old people, treating old people, and surgery in the elderly are more favorable. Higher scores on the four semantic differentials are less favorable responses. F ratios for time refer to before and after the clerkship. Those for surgery refer to surgery *versus* no surgery choice.

† $p < 0.05$, ‡$p < 0.01$, §$p < 0.001$.

in some part from the philosophy and content expressed in the clerkship. However, this cannot be concluded definitely without a control group of similar students in the clerkship not exposed to the philosophy and content on aging. Attitudes about old people in general remained the same. This was not surprising, since no attempt was made to alter cultural beliefs and general attitudes about the elderly. Such attitudes are based on a lifetime of experiences and interactions with old people and would be difficult to alter. These attitudes were relatively positive among the students. It is surprising that attitudes toward treating the elderly became more favorable, since other studies[13,14] have found that students tend to change negatively in regard to treating the elderly as they progress through medical school. The assumption has been that this was the result of seeing older patients who were chronically ill and debilitated as well as having role models that may not have held very favorable attitudes about aging. All of the students were exposed to older patients by doing workups, participating in rounds, and observing surgery in the operating room. Surgical bed turnover is rapid. Students can participate as part of doing preoperative assessments and then see the older patient go through surgery and be discharged within a short time. Therefore, the surgical clerkship may present a more favorable view of successfully treating the older person than that seen in other types of clerkships. Observing surgical problems resolved could also account for the improved attitudes about operating on elderly patients as well.

More explanation is needed as to why students became less positive about geriatrics and pediatrics as a profession after the clerkship. Pediatrics had been used as a control variable and it had not been expected that attitudes could change significantly. Although attitudes toward both concepts changed significantly in a negative direction, the attitudes were still in a favorable range of the scale (pediatrics being slightly more favorable than geriatrics). What we believe may have occurred is that students became more confident of their career choices as the clerkship progressed. We have demonstrated earlier that the surgical clerkship is often the place where students decide between a clinical and nonclinical career[15] and that career choices often change during the surgical clerkship.[16] We also have used the semantic differential technique as a means of comparing attitudes about medical professions with that of career choice, and have found that attitudes toward different specialties predicts later career choice with students becoming less positive toward other medical careers as they make their own career selections.[17] Therefore, students not going into geriatrics or pediatrics would be expected to become less positive about these professions and more positive about their own preference. None of the students listed geriatrics as a career choice. Students who selected pediatrics at the end of the clerkship, however, had significantly better attitudes about pediatrics than the rest of the class. Therefore, attitude changes about the two professions are probably a reflection of career choices becoming more definite by the end of the clerkship with fewer students uncertain about their future plans.

More negative attitudes about emergency surgery in the elderly could be said to be a positive outcome, since we stressed the dangers of waiting until a condition could become an emergency in the older person and that the risk of emergency surgery was greater in the old than in the young. This seems to have been conveyed, particularly since the potential surgeons were even more unfavorable about emergency surgery in the elderly than were the other students in the class.

Attitudes about elective surgery in the elderly, however, did not change significantly. Even though the attitudes were generally positive, one might have expected that these attitudes would have become more positive as those toward emergency surgery became more negative. Perhaps we overstressed the dangers of emergency without em-

phasizing enough the potential of elective surgery as a prophylactic treatment. Or, it is possible that clinical experience on the wards was a more graphic way of demonstrating to the students the pitfalls of emergency surgery in older patients.

Why females changed more positively than males on two of the attitudes about surgery cannot be answered from the current study. The correlations between sex and attitudes were at minimal levels and did not account for the variance in attitude change of the class as a whole.

Except for attitudes toward emergency surgery and pediatrics, the would be surgeons had very similar attitudes about the elderly patients as the other students. Most of our earlier studies have found numerous differences between potential surgeons and other students. Attitudes about the elderly and their care, however, is a problem that is generic to all medical specialties, except perhaps for pediatrics. The fact that the surgical clerkship, in contrast to other medical school clinical experiences, can have a positive, rather than a negative, influence on attitudes about aging for all students regardless of their career choices is encouraging and suggests that including content on surgical management of the elderly can help students become more favorable about treating older patients.

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