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Mark K. Ferguson

Normal Changes of Aging and Their Impact on Care of the Older Surgical Patient **289**

Deirdre M. Carolan Doerflinger

Patients 65 years of age or older constitute a large part of the perioperative population. Because the older patient's physiology is unique, it is essential that health care providers recognize the normal physiology of aging and be able to differentiate normal changes of aging from those of pathology. The normal changes of aging result in the older patient presenting differently with specific care needs. Care to this older population must be individualized by providers who are familiar with geriatrics in order to enhance outcomes.

Preoperative Evaluation and Risk Assessment for Elderly Thoracic Surgery Patients **301**

Michael Jaklitsch and Sarah Billmeier

The elderly population is growing and increasingly presents for thoracic surgery evaluation. Advancing age has been shown to increase mortality after thoracotomy. Multidisciplinary improvements in perioperative care over the last decades have reduced this risk, making surgical intervention safe for selected patients. A targeted preoperative evaluation helps determine appropriate operative candidates and directs care toward measures to limit or prevent complications. Preoperative assessment in the elderly should include evaluation of cardiopulmonary reserve, comorbidities, and functional and cognitive status. Age alone should not be a contraindication for thoracic surgery.

Benign Thoracic Disease in the Elderly **313**

Rita A. Mukhtar and Pierre R. Theodore

Elderly patients present challenges in diagnosis and treatment of various disease processes. Although they may develop thoracic diseases seen in other age groups, older patients often have atypical presentations of these diseases, and may be vulnerable to thoracic pathology as a result of comorbid diseases. Pulmonary function testing of the elderly population shows increased ventilation-perfusion mismatch, decreased forced expiratory volumes, and decreased diffusion capacities. Combined with increased chest wall rigidity, decreasing muscle mass, impaired mucociliary clearance, blunted perception of dyspnea, and possible increased aspiration risk because of underlying neurologic dysfunction, these physiologic changes associated with aging make this population particularly vulnerable to thoracic disease.

Benign Esophageal Disease in the Elderly **321**

M. Blair Marshall

The diagnosis and management of benign esophageal disease in the elderly is not necessarily different from that in the general population; however, the comorbidities associated with an aging population are the critical factors that impact morbidity and mortality associated with treatment in this population. Some of the most minimal

procedures, such as injection of botulism toxin, can be associated with significant morbidity because of the comorbidities in patients for whom a more invasive procedure is considered prohibitive. For most benign pathology of the esophagus, there are multiple treatment options. Selection of the appropriate treatment is based on consideration of the individual patient and the potential impact of the treatment option, both positive and negative.

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Andrew C. Chang and Julia S. Lee

This article focuses on the impact of patient age on outcomes following esophageal resection and on potential strategies to improve perioperative management of geriatric patients undergoing esophagectomy for cancer.

The Emerging Role of Minimally Invasive Surgical Techniques for the Treatment of Lung Malignancy in the Elderly **345**

Paul M. Heerdt and Bernard J. Park

As a consequence of the general aging of the population, improved diagnostic techniques, and preoperative interventions to enhance the efficacy of surgical therapy, increasing numbers of elderly patients are presenting for pulmonary resection. Clear association between advanced age and the perioperative morbidity and mortality associated with lung cancer surgery has generated considerable interest in applying minimally invasive operative techniques in the geriatric population under the belief that this approach will improve outcome. This review examines the available data regarding video-assisted thoracoscopic lobectomy and concludes that this technique for the surgical treatment of early-stage lung cancer may parallel conventional thoracotomy in terms of oncologic efficacy while decreasing perioperative morbidity in the elderly.

Postoperative Pain Management in the Elderly Undergoing Thoracic Surgery **353**

Marie N. Hanna, Jamie D. Murphy, Kanupriya Kumar, and Christopher L. Wu

The management of postoperative pain in the elderly patient undergoing thoracic surgical procedures represents a significant challenge to health care providers. Compared with younger patients, the elderly patient generally is at higher risk for postoperative complications. Choice of postoperative analgesic regimens may influence perioperative morbidity, particularly in this high-risk group of patients. The available data suggest that use of regional analgesic techniques (ie, epidural and paravertebral catheters) is associated with a decrease in perioperative pulmonary complications.

Evaluation and Management of the Elderly Patient at Risk for Postoperative Delirium **363**

Anita S. Bagri, Alex Rico, and Jorge G. Ruiz

Geriatric patients are at a high risk for the development of postoperative delirium. By recognizing predisposing and precipitating risk factors, preventive measures can be undertaken to reduce this risk. Accurate and timely diagnosis is essential, and we offer therapeutic strategies to help reduce the high morbidity and mortality of this important condition.

Chemotherapy in the Older Patient with Operable Non–Small Cell Lung Cancer: Neoadjuvant and Adjuvant Regimens 377

Ilene Browner and Michael Purtell

Several excellent, non–age-specific review articles and meta-analyses summarize in detail the available trials of surgery and either induction or adjuvant therapy with or without local radiotherapy in the treatment of early non–small cell lung cancer (NSCLC). A detailed review of the literature on the comprehensive assessment of and chemotherapy in the elderly patient with NSCLC is beyond the scope of this article. Instead, the goal is to amalgamate the two topics and develop some practical guidelines to assist the clinician in deciding which therapies most are appropriate for older patients with potentially curable NSCLC.

Thoracic Irradiation in the Elderly 391

Kristin J. Redmond and Danny Y. Song

This article reviews radiation treatment of thoracic malignancies in elderly patients. In general the literature suggests that thoracic irradiation is equally efficacious in elderly patients as in younger patients and is associated with increased but acceptable toxicity. Technical advances are allowing a further reduction in morbidity with preliminary results suggestive of stable outcomes. Prospective data from elderly specific trials are needed to determine the optimal treatment of lung cancer and to compare innovative radiation technology with standard therapies.

Quality of Life and Ethical Concerns in the Elderly Thoracic Surgery Patient 401

Holly M. Holmes

With the high burden of lung diseases in the elderly and the rapid aging of the population, thoracic surgeons increasingly will be confronted with the dilemmas that arise in caring for older persons. Providing the optimal treatment for older persons will involve carefully selecting those who have early-stage disease and who are fit for surgery and providing more limited resections to patients who are frailer. Age alone does not determine whether a patient will benefit from thoracic surgery with a reasonable quality of life. Providing appropriate treatment will require a more focused and geriatric-specific evaluation of elderly patients.

Thoracic Surgery in the Elderly: Areas of Future Research and Studies 409

Joseph LoCicero III and Jason Philip Shaw

Elderly patients (defined as those aged more than 75 years) require specialized care due to the problems associated with deteriorating organ function, minimal organ reserve, blunted responses to stress, and general overall frailty; however, careful, well-planned trials for elderly patients undergoing thoracic surgical procedures have been few, sporadic, and nebulous to date. With the help of the Council on Surgical and Related Medical Specialties of the American Geriatrics Society, a thorough review of the body of literature has been conducted and a research agenda has been defined. Important surgical issues remain to be defined and investigated.

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