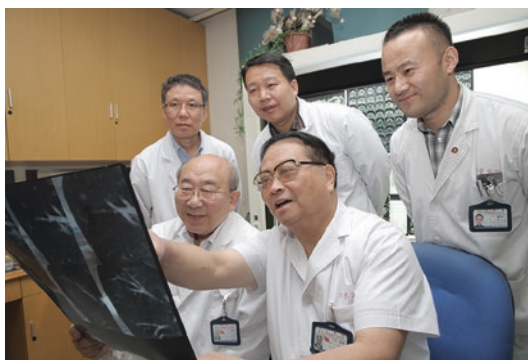


Preface

The Lung Nodule Diagnosis and Treatment Center Team. Front row (*seated*): Dr. Zhuowei Yu (*right*); Dr. Guozhen Zhang (*left*). Back row (*standing*): Dr. Xiangpeng Zheng (*right*); Dr. Ming Li (*middle*); Dr. Fanzhen Lv (*left*)



The Twelfth Anniversary of the Zhang Guozhen CT Consultation Center (CCC) and Lung Nodule Diagnosis and Treatment Center (LN-DTC) at Fudan University Huadong Hospital.

Lung cancer screening in high-risk populations is a pivotal measure for the early detection and management of this malignancy. Over the past decade, the screening approach has gradually evolved from conventional chest radiography to low-dose CT. With increasing employment of low-dose CT for screening, the number of incidentally detected micronodular lesions spiked. The accurate assessment and proper management of pulmonary micronodules are critical measures for patients' longevity and quality of life. Mounting evidence has shown that timely surgical removal of micronodular lung cancer via video-assisted thoracoscopic surgery (VATS) has dramatically improved the prognosis.

With strong support from the hospital administration, the Zhang Guozhen CT Consultation Center was established in 2005 as China's first imaging clinic. This center provided patients with comprehensive imaging consultation, a pattern that connects radiologists face-to-face with patients, and has won great acclaim for its improved diagnostic accuracy.

Under the leadership of the hospital president, Dr. Yu Zhuowei, the Zhang Guozhen Center on the Diagnosis and Treatment of Pulmonary Micronodules was established based on the CT Consultation Center and was joined by experts from the Departments of Thoracic Surgery and Radiation Oncology in 2013, to confront the challenge to medical communities from the increasing incidence of pulmonary micronodular lesions. In the new center, multidisciplinary medical teams offer patients one-stop medical services from diagnosis to treatment, which is consistent with international standards of cancer management, with the characteristics of individualized treatment to benefit patients to the furthest extent possible.

Based on thousands of micronodular lung cancer cases over the past decade, we propose an “EAST” principle for the management of SLCs that includes Early detection of subcentimeter nodules, Accurate diagnosis of lung cancers at stages 0/I, Surgical removal of SLCs, and Teamwork for the pre-/postoperative localization of nodules for pathological assessment, with the goal of detecting and eradicating lung cancer at stages 0/I. Obviously, the challenge is massive. However, considering the astonishing 10-year survival of nearly 100% and the tremendous savings on social healthcare payments due to unnecessary adjuvant chemotherapy or radiotherapy, any endeavors to deal with such challenges are worthwhile. We have established systemic and reliable strategies in the diagnosis and treatment of SLCs, represented by the CT angiogram of tumor angiogenesis (CTA-TA) and the CT-guided fine-needle puncturing (CT-FNP) technique. Using these strategies, the center has achieved diagnostic accuracy in SLCs of above 95%.

During consultations and teaching in the past years, we noticed a lack of consensus in the clinic-radiologic-pathologic relationship, imaging techniques, and the management strategies for micronodular lung cancer, particularly adenocarcinoma in situ (AIS). Diagnostic standards and skills vary among physicians, hospitals, and regions, causing false-positive or false-negative diagnoses that subsequently mistakenly guide further medical intervention. This is one of the major reasons for a poor prognosis. Today, thanks to advancements in imaging techniques, the proportion of AIS in lung cancer has increased to above 30% from less than 5% in the 1980s, changing the profile of lung cancer. Therefore, it is extremely important to expand the research on diagnosis and treatment of very early-stage lung cancer for all parties involved in the management of this disease. Unfortunately, there is a lack of systematic materials such as books, training courses, or symposiums focusing on imaging assessment and management strategies for micronodular lung cancer. Hence, we decided to edit this book based on our previous work, emphasizing practicability.

In Part I, experts from pathology and radiology comprehensively review the state-of-the-art advancements of SLC in individual research fields, and information on the cross-sectional anatomy of the lung and post-processing techniques of CT imaging is updated. Part II focuses on the imaging features, differential diagnosis, and radiologic-pathologic correlations of SLCs, which are divided into three categories, namely, pGGN, mGGN, and solid nodules, in compliance with the Guidelines on Lung Cancer Screening from the National Comprehensive Cancer Network (NCCN). Most importantly, the characteristic CT sign for SLC diagnosis and dif-

ferentiation, CT angiogram of tumor angiogenesis (CTA-TA) (discovered and coined by Dr. Zhang), is extensively discussed. Part III briefly introduces the therapeutic management strategies for SLCs, including surgical and nonsurgical approaches, e.g., stereotactic ablative radiation therapy (SABR) and radiofrequency ablation (RFA). Finally, to highlight the applicability of these subjects, the authors have meticulously prepared 50 clinical cases of pathologically proven benign and malignant pulmonary nodules with in-depth discussion and experts' comments for a self-test for readers, with the goal of furthering their understanding of imaging and the management strategies for SLCs.

Again, without the continuing support from the hospital, the center would not have been successful; without the establishment of the center, this book would not have come about. Therefore, on the twelfth anniversary of the Zhang Guozhen Center, the publication of this book is not simply a summary of past work but also an opportunity to express our deep gratitude for the hospital's support. The hospital president, Dr. Yu, graciously reviewed the book manuscript and provided numerous valuable comments; in addition, he composed the foreword with the general secretary, Dr. Gao. We are greatly appreciative.

We also owe a debt of thanks to our colleagues from the Departments of Radiology and Pathology; collaborators from Tongji University Pulmonary Hospital, Shanghai Jiao Tong University Chest Hospital, and Fudan University Zhongshan Hospital and Huashan Hospital; and publishing editors from People's Military Medical Press and Springer. Additionally, we are grateful for the inclusion of Mr. Yang Zhen's detailed delicate cartoons. And last but not least, we thank our families for their understanding and support.

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