

One Case of High-Risk Pulmonary Nodule Cured by Integrated Traditional Chinese and Western Medicine

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Abstract: Most high-risk pulmonary nodules are precancerous lesions of lung cancer. Current therapeutic approaches are dominated by invasive operations such as surgical resection, yet such treatments carry risks of various complications and irreversible impairment of pulmonary function. This paper reports a clinical case of a high-risk pulmonary nodule treated with integrated traditional Chinese and Western medicine. After more than one year of therapy, the high-risk pulmonary nodule transformed into an inflammatory lesion, and the patient avoided surgical trauma. This case indicates that traditional Chinese medicine (TCM) has certain advantages in intervening in the progression of pulmonary nodules. Compared with invasive Western medical treatment, TCM therapy causes less trauma to patients. For patients with high-risk pulmonary nodules who refuse invasive surgical intervention, TCM treatment provides an alternative option besides surgery alone. This case can offer references for clinical management of high-risk pulmonary nodules.

Keywords: High-risk pulmonary nodule; Integrated traditional Chinese and Western medicine therapy; Traditional Chinese medicine treatment; Medical case report

Online publication: October 23, 2026

1. Introduction

Pulmonary nodules refer to focal irregular or quasi-circular lesions in the lung with a maximum diameter ≤ 3 cm. Medically, on imaging, they present as focal shadows in the lung with slightly higher density than pulmonary tissues, usually unaccompanied by signs such as hilar lymphadenopathy, pulmonary atelectasis, and pleural effusion ^[1]. According to risk stratification, pulmonary nodules are divided into low-risk, intermediate-risk, and high-risk types. Most high-risk pulmonary nodules represent early-stage lung cancer or precancerous lesions, and invasive interventions such as surgical resection constitute the major therapeutic

modality in modern Western medicine^[2]. Nevertheless, such therapeutic measures may lead to overtreatment^[3] and possibly cause irreversible damage to patients' pulmonary function^[4]. This article reports a patient with a high-risk pulmonary nodule who received integrated traditional Chinese and Western medicine and achieved satisfactory curative effects. The high-risk pulmonary nodule turned out to be benign without surgical operation, and the case is reported as follows.

2. Clinical data

Patient Yang, male, 45 years old, first visit on July 18, 2024.

Chief Complaint: Cough with purulent yellow sputum for more than one month.

History of Present Illness: More than one month prior to presentation, the patient developed a spontaneous cough and expectoration of purulent yellow sputum with occasional blood streaks in the sputum, accompanied by sore throat, chest pain, chest stuffiness, and shortness of breath. He sought medical care at the First Affiliated Hospital of Sun Yat-sen University on June 24, 2024. Chest and upper-abdominal plain CT scan demonstrated: 1. A mixed-density nodule measuring approximately 28×17 mm located in the dorsal segment of the right lower lobe of the lung, with a spiculated margin, venous dilatation, and pleural indentation; posterior to it lay another mixed-density nodule of 10×10 mm also with a spiculated margin, highly suggestive of malignancy; 2. Multiple ground-glass nodules in the apical segments of the right upper lobe and left upper lobe with ill-defined boundaries and suspected spiculated signs, raising suspicion of adenocarcinoma. The hospital advised inpatient surgical treatment. Frightened by surgical risks, the patient declined hospitalization and came to our hospital for TCM therapy. Present symptoms: intermittent cough, gurgling sputum in throat, expectoration of purulent yellow sputum, dull chest pain, fair appetite, defecation every 2–3 days with dry-hard stool, normal urination, restless sleep, average mental status and physical strength, and frequent spontaneous sweating upon slight exertion.

Past History: No history of chronic diseases. Thirty-year smoking history, two packs per day, non-quitter; thirty-year alcohol-drinking history, 200 ml per day, non-quitter.

Physical Examination: General condition fair, moderate build, dull complexion, pharyngeal congestion (+), dim-purple tongue with tooth-marked borders, thick-white greasy tongue coating, string-like pulse, weak pulse at the right cun position.

Western Diagnosis: Pulmonary nodule disease.

TCM Diagnosis: Mass-accumulation disease (Ji Ju), syndrome of lung-spleen Qi deficiency with intermingled phlegm, blood stasis, heat and toxin.

Therapeutic Principles: Soften hardness and resolve phlegm, activate blood and unblock collaterals, dissipate masses and remove stasis, clear heat and detoxify, supplemented by tonifying lung-spleen Qi.

Prescriptions:

(1) Chinese herbal medicine (14 doses)

Astragalus membranaceus 30 g, *Codonopsis pilosula* 20 g, *Scutellaria baicalensis* 10 g, *Mori Cortex* 15 g, *Citri Reticulatae Pericarpium* 10 g, *Pinelliae Rhizoma Preparata* 8 g, *Poria Cocos* 15 g, *Bulbus Fritillariae Thunbergii* 15 g, *Scrophulariae Radix* 15 g, *Chuanxiong Rhizoma* 6 g, *Salvia Miltiorrhiza* 30 g, *Paeoniae Radix Rubra* 15 g, *Angelicae Dahuricae Radix* 10 g, *Luffae Fructus Retinervus* 15 g, *Salvia Chinensis* 15 g, *Prunellae Spica* 30 g, *Taraxaci Herba* 20 g, *Solani Lyratii Herba* 30 g, *Curcumae Longae*

Rhizoma 10 g, *Scutellariae Barbatae Herba* 15 g, *Glycyrrhizae Radix et Rhizoma* 6 g. Fourteen doses, decocted in water, taken twice daily.

(2) Western medicine

Moxifloxacin Hydrochloride Tablets (Avelox), 400 mg once daily orally for 14 days; Eucalyptol, Limonene and α -Pinene Enteric-Coated Capsules (Sinomenine), 300 mg three times daily orally for 14 days.

Given the complicated condition, the patient was advised to return for follow-up visits every two weeks, receive CT re-examination three months later, quit smoking and alcohol, keep a light diet, and avoid spicy irritants, raw-cold, and greasy-sweet food.

Second visit on August 1, 2024: After medication, the frequency of cough and sputum production decreased; chest pain and sore throat during cough remained obvious; sleep quality improved; appetite was fair; defecation occurred once a day with smoother bowel movement; urination normal; mental status and physical strength unchanged. Physical examination: pharyngeal congestion (+), dim-purple tongue with tooth-marked borders, thick-white greasy coating, string-like pulse, weak right-cun pulse. Symptoms were attributed to lung-Qi obstruction by phlegm-heat toxin. *Curcumae Longae Rhizoma* was removed from the previous formula; *Houttuyniae Herba* 10 g and *Platycodonis Radix* 6 g were added; *Codonopsis pilosula* was reduced to 15 g. Fourteen doses.

Third visit on August 15, 2024: After medication, the patient expectorated 3–5 coffee-colored sputum clumps daily and felt refreshed in the chest after expectoration. Intermittent chest stuffiness and shortness of breath persisted; chest pain and sore throat disappeared; sound sleep, good appetite, once-daily smooth defecation, normal urination; mental status and physical strength markedly improved. Physical examination: pharyngeal congestion (-), dim-purple tongue with tooth-marked borders, white-greasy coating, string-like pulse, weak right-cun pulse. Since symptoms were obviously alleviated, therapeutic intensity for clearing heat-toxin, softening-hardness dissipating masses, and activating-blood unblocking collaterals was increased. *Houttuyniae Herba*, *Platycodonis Radix* and *Mori Cortex* were removed; *Conchae Ostreae* 30 g (decocted first), *Akebiae Fructus* 10 g and *Zedoariae Rhizoma* 15 g were added. Thirty doses, water-decocted. Considering the long travel distance and stabilized condition, follow-up visits were arranged on a monthly basis thereafter.

Fifth visit on October 30, 2024: Cough and sputum production disappeared; chest stuffiness and shortness of breath were relieved; sleep, appetite, and defecation-urination were normal; mental status and physical strength were good. Physical examination: dim-purple tongue with tooth-marked borders, white-greasy coating, string-like pulse, slightly weak right-cun pulse. Chest CT re-examination at the First Affiliated Hospital of Sun Yat-sen University on October 28, 2024 showed: patchy ground-glass shadow in the dorsal segment of right lower lung lobe, ill-defined boundary, heterogeneous density with traversing blood vessels, measuring approximately 24×16 mm (shrunk compared with June scan), undetermined nature; multiple ground-glass shadows in the lateral segment of right middle lobe, the largest one 6×5 mm (reduced), suspected glandular precursor lesion; multiple solid nodular shadows in the medial segment of right middle lobe, maximum size 3×3 mm, suspected glandular precursor lesion. Since the masses shrank and pathogen-eliminating therapies had taken effect, the formula maintained the principle of simultaneous pathogen elimination and healthy-Qi reinforcement. *Conchae Ostreae* and *Akebiae Fructus* were removed; *Hedyotidis Diffusae Herba* 30 g and *Sparganii Rhizoma* 15 g were added. Thirty doses.

Ninth visit on February 28, 2025: The patient reported abdominal distension, worse at night, frequent daytime flatus; no other complaints; sleep, appetite, defecation-urination, and physical condition remained

good. Physical examination: dim-purple tongue with tooth-marked borders, white-greasy coating, string-like pulse, slightly weak right-cun pulse. Chest CT from the First Affiliated Hospital of Sun Yat-sen University on February 16, 2025 demonstrated:

- (1) Patchy ground-glass shadow in the dorsal segment of the right lower lobe, about 13×11 mm (smaller and lower-density compared with the October 2024 scan), suggestive of an inflammatory lesion;
- (2) Multiple ground-glass shadows in the lateral segment of the right middle lobe, largest lesion 5×4 mm (reduced), suggestive of an inflammatory lesion;
- (3) Multiple solid nodules in the medial segment of the right middle lobe, maximum 3×3 mm, suggestive of an inflammatory lesion. To treat abdominal distension and excessive flatus, *Aucklandiae Radix* 6 g was added to the formula. Thirty doses.

Sixteenth visit on September 30, 2025: No special complaints; normal appetite, sleep, defecation-urination; good mental and physical condition. Physical examination: dim-purple tongue with tooth-marked borders, white-greasy coating, string-like pulse; pulse at right cun position stronger than before. Chest CT re-examination performed at the First Affiliated Hospital of Sun Yat-sen University on September 29, 2025 showed patchy ground-glass shadow in the dorsal segment of the right lower lobe with ill-defined boundary and non-measurable scope, considered an inflammatory lesion; other findings were similar to previous scans. After more than one-year TCM treatment, the initially highly-malignant-suspected high-risk nodule transformed into an inflammatory lesion with encouraging therapeutic outcome. The treatment course could be concluded, and regular re-examinations were recommended.

3. Diagnosis and treatment analysis

3.1. Western medicine understanding and management of high-risk pulmonary nodules

On medical imaging, pulmonary nodules are classified by density into solid nodules and subsolid nodules (including pure ground-glass nodules and mixed ground-glass nodules), among which mixed ground-glass nodules carry the highest malignancy probability. According to CT findings, risk factors for malignant pulmonary nodules include upper-lobe location, diameter greater than 8 mm, and heterogeneous mixed density. More malignant features indicate higher risk, such as ill-defined nodular boundary, short-spiculated sign, lobulation sign, traversing blood vessels, invasion of adjacent tissues, and pleural indentation^[2]. Integrating patients' clinical history, initial CT characteristics, and serial imaging changes during follow-up, pulmonary nodules are stratified into low-risk, intermediate-high-risk, and high-risk categories. Mixed ground-glass nodules over 10 mm with malignant features or progressive enlargement during follow-up constitute the diagnostic criteria for high-risk pulmonary nodules^[3]. In this case, the middle-aged male patient had a long-term smoking history and obvious pulmonary-infection manifestations. Two mixed ground-glass nodules were detected in the right lower lobe on the first visit, one measuring 28×17 mm, close to tumor-sized diameter, with irregular boundary and adjacent-tissue invasion, complying with criteria for high-risk pulmonary nodule.

Nevertheless, imaging modalities alone cannot fully and accurately judge the nature of suspicious pulmonary nodules. Even advanced imaging tools may misclassify benign pulmonary nodules as malignant tumors^[4]. Sole reliance on imaging results may lead to unnecessary resection of benign nodules^[5,6], resulting in overtreatment. Pathological biopsy by obtaining pulmonary lesion specimens through invasive procedures is universally recognized as the most authoritative method for identifying high-risk pulmonary nodules. However, subject to nodule location, operator proficiency, and patient cooperation, sampling

bias is inevitable and may produce false-negative preoperative biopsy results ^[7]. Patients may also suffer biopsy-related complications such as hemorrhage and pneumothorax ^[8].

3.2. TCM understanding and management of pulmonary nodules

3.2.1. Etiology of pulmonary nodules

Pulmonary nodule formation results from combined external and internal pathogenic factors. External factors include six exogenous pathogenic evils, epidemic toxin, and smoke-haze pathogens. The lung is a delicate Zang-fu organ. Invasion by external pathogens disturbs lung diffusion-depuration and impairs fluid transportation, generating internal phlegm; external evils damage lung Qi, and Qi deficiency further leads to blood stasis. Internal factors originate from irregular diet, inherent physical deficiency, and inappropriate daily life. Modern-day fast-paced lifestyles often lead to irregular meals that injure the spleen and generate dampness. Excessive intake of rich-greasy, raw-cold, and fried food produces phlegm-heat. Patients with constitutional lung-Qi deficiency are more susceptible to external evils if daily habits are poor. Insufficient lung-spleen Qi fails to promote fluid and blood circulation, giving rise to phlegm and blood stasis.

3.2.2. Pathogenesis of pulmonary nodules

The pathogenesis of pulmonary nodules is lung-spleen Qi deficiency complicated by intermingled phlegm, blood stasis, heat, and toxin in the lung. Lung-spleen Qi deficiency is the root cause, while phlegm, blood stasis, heat, and toxin represent branch manifestations. As an ancient TCM saying goes: “The lung serves as the reservoir of phlegm, and the spleen is the source producing phlegm.” Constitutional deficiency aggravated by unhealthy lifestyles and external pathogenic factors impairs lung-spleen Qi. Since “Qi moves body fluids”, deficient Qi fails to circulate fluids, and phlegm is generated; since “Qi promotes blood circulation”, deficient Qi causes blood stasis. Long-term intermingled phlegm and blood stasis invade pulmonary collaterals, transform into heat and further generate toxin, so phlegm-stasis-heat-toxin accumulate inside the lung and form pulmonary nodules.

Summarized from years of clinical experience, pathological products transforming into heat-toxin constitute a critical link in nodule genesis. Huang-Di Nei-Jing (Huangdi’s Internal Classic) states: “All pain, itching, sores and ulcers are related to the heart” ^[9]. Zheng-Zong Wai-Ke (Orthodox Manual of External Medicine) also records: “Once fire generates... various diseases occur... externally it produces abscess, carbuncle, back sores, duikou sores and furuncles” ^[10]. This indicates that the fire-heat pathogen is closely associated with superficial masses. Pulmonary nodules are internal masses whose formation also involves fire-heat pathogen. Phlegm and blood-stasis interact in pulmonary collaterals, leading to Qi stagnation transforming into heat. Under the scorching effects of fire-heat, pathological products accumulate further and develop into severe, intractable “toxin”. The heavier the toxin, the higher the risk level of pulmonary nodules. Imaging manifestations, including enlarged nodule diameter, increasing malignant internal features, and invasion of adjacent tissues, are external reflections of severe toxin accumulation.

3.2.3. Detailed analysis of syndrome differentiation and treatment

“Pulmonary nodule” has no corresponding independent disease name in traditional Chinese medicine. According to pathological features, it falls under the TCM disease categories of “Zheng-Jia (Abdominal Masses)” and “Ji-Ju (Mass-Accumulation)”.

This middle-aged male patient had a long-term smoking history. Lung tissues were chronically assaulted

by smoke-haze toxin, and lung-Qi was consumed, manifested by a weak pulse at the right cun position. Impaired lung diffusion-depuration disturbed water-fluid metabolism and produced phlegm; phlegm transformed into heat and scorched blood collaterals, leading to blood stasis, hence cough, yellow-colored sputum, and blood-streaked sputum. Excessive phlegm-heat obstructed chest Qi movement and produced chest pain. The lung and large intestine are interior-exterior related Zang-fu organs. Deficient lung-Qi failed to promote intestinal peristalsis and caused prolonged defecation intervals with dry-hard stool due to lung-heat consuming intestinal fluids. Long-term alcohol drinking and improper diet generated abundant damp-heat and injured spleen-Qi. Retained dampness obstructed Qi movement and aggravated damp-heat, producing phlegm that ascends to the lung. Phlegm and blood-stasis accumulated in lung tissues and gradually transformed into heat-toxin, finally forming the high-risk pulmonary nodule.

Based on etiology and pathogenesis, therapeutic principles were to tonify lung-spleen Qi, invigorate spleen to resolve phlegm, activate blood and unblock collaterals, soften hardness to dissipate masses, clear heat, and detoxify. In the formula, *Astragalus membranaceus* and *Codonopsis pilosula* tonify lung-spleen Qi; *Scutellaria baicalensis* and Mori Cortex clear lung-heat, relieve cough, and resolve phlegm. Modified from Er-Chen Decoction and Xiao-Luo Pills, Citri *Reticulatae Pericarpium*, *Pinelliae Rhizoma Preparata*, Poria Cocos, *Houttuyniae Herba*, *Scrophulariae Radix*, *Bulbus Fritillariae Thunbergii*, *Conchae Ostreae*, *Prunellae Spica*, *Salvia Chinensis* invigorated spleen to eliminate damp-phlegm, cleared heat-phlegm, softened hardness and dissipated masses. *Scrophulariae Radix* was used for sore-throat heat-clearing because of pharyngeal congestion. As a mineral medicine, raw *Conchae Ostreae* exerted strong hardness-softening effects. *Salvia Miltiorrhiza* and Chuanxiong Rhizoma activated blood and unblocked collaterals; *Sparganii Rhizoma*, *Zedoariae Rhizoma* and *Paeoniae Radix Rubra* broke static blood and removed stasis. *Angelicae Dahuricae Radix* and *Luffae Fructus Retinervus* acted on tiny pulmonary collaterals to enhance stasis-removing efficacy. *Curcumae Longae Rhizoma* warmed and unblocked blood vessels, preventing cold-nature herbs from stagnating Qi-blood circulation. Cold-property Taraxaci Herba cleared heat-toxin and possessed anti-tumor effects with mild gastric irritation, commonly used for heat-toxin removal^[11]. *Hedyotidis Diffusae Herba*, *Scutellariae Barbatae Herba*, *Solani Lyratii Herba* and *Akebiae Fructus* exerted strong effects in clearing heat-toxin, detumescence and dissipating masses. Modern pharmacological research has proven their favorable anti-tumor activity^[12,13]. Given multiple malignant imaging features and malignancy suspicion from two top-tier hospitals, severe toxin accumulation in pulmonary collaterals required these potent medicinal substances.

Throughout the whole therapeutic process, patient benefit was prioritized, and the following principles were followed:

- (1) Give full play to advantages of modern Western medicine. At the initial visit, obvious phlegm-heat obstructing lung indicated severe pulmonary infection. Moxifloxacin hydrochloride antibiotic was prescribed for infection control and eucalyptol-limonene- α -pinene enteric-coated capsules for sputum dilution to rapidly control infection and prevent deterioration. Applying Western medicine advantages to control acute conditions fully embodied the therapeutic principle “treat the branch in acute episodes”. Serial CT scans of Western medicine were maintained during follow-up to monitor nodule changes and objectively evaluate TCM curative effects and avoid missed deterioration.
- (2) Select medicines with low toxic side effects, eliminate pathogenic factors without damaging healthy Qi. Pulmonary nodules are formed by accumulated pathological products such as phlegm, heat, blood stasis,

and toxin. Most formulas adopted medicines for removing stasis, resolving phlegm, softening masses, and clearing heat-toxin. Considering that insect-derived or highly toxic herbs commonly used for pulmonary-nodule treatment may impair liver-kidney function, such drugs were avoided in this treatment^[14]. The only mineral medicine, raw *Conchae Ostreae*, belongs to the food-medicine homologous substance. Furthermore, tonifying-healthy-Qi herbs were compatible with pathogen-eliminating medicines to reduce injury to stomach-qi and minimize potential drug-related harm.

- (3) Never neglect strengthening the root-origin healthy-Qi. Although nodule formation is related to pathological accumulation, “where pathogenic factors invade, healthy-Qi must be deficient”. Lung-spleen Qi deficiency reduces disease resistance and impairs transportation of body substances, which constitutes the root cause generating phlegm-stasis-heat-toxin. The condition belongs to the root-deficiency-branch-excess pattern: “when healthy-Qi is abundant, pathogenic factors cannot invade.” Therefore, pathogen elimination was always accompanied by reinforcing healthy-Qi. *Astragalus membranaceus* and *Codonopsis pilosula* for tonifying lung-spleen-Qi persisted in all prescriptions to provide intrinsic power for eliminating pathological products. Sufficient lung-spleen-Qi prevents the generation of phlegm-blood-stasis and promotes resolution of pulmonary nodules. Treatment emphasized simultaneous elimination of pathogens and reinforcement of healthy-Qi, treating both root and branch, regulating imbalanced constitution, and fundamentally removing the soil for nodule genesis through non-invasive approaches, which represents irreplaceable strengths of TCM therapy.

It needs emphasizing that reports of successful TCM intervention for high-risk pulmonary nodules remain scarce^[15,16]. Compared with surgical resection, conservative TCM therapy cannot guarantee halting progression of high-risk pulmonary nodules. Before initiating TCM therapy for high-risk-nodule patients, clinicians must fully and explicitly inform patients of such risks. If TCM fails to work, surgery should be actively adopted to prevent irreversible deterioration and missed surgical opportunity. After full understanding of his disease and risks of conservative therapy, this patient firmly consented to TCM conservative treatment.

4. Conclusion

Based on the pathogenesis understanding of “lung-spleen Qi deficiency as root, intermingled phlegm-heat-blood-stasis-toxin as branch”, this case adopted simultaneous pathogen-elimination and healthy-Qi-reinforcement therapeutic principles with integrated traditional-western-medicine intervention for high-risk pulmonary nodule. The highly malignancy-suspected nodule shrank markedly and finally transformed into an inflammatory lesion with a promising curative effect. This case demonstrates that TCM possesses certain strengths in intervening in the progression of high-risk pulmonary nodules. Integrated traditional-western-medicine therapy can combine TCM’s strengths of reinforcing healthy-Qi, eliminating pathogens, and treating both root-and-branch with western-medicine’s precise monitoring via advanced techniques. Compared with surgery alone, it causes less bodily trauma and offers an alternative conservative option for patients refusing surgical intervention. This case is reported to provide clinical references for pulmonary-nodule management.

Disclosure statement

The authors declare no conflict of interest.

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