

Pulmonary nodules, diagnostic and therapeutic relation

Abstract

Computerized tomography (CT) technique popularity in China led to a new discovery—high incidence of pulmonary nodules in most adults. New therapeutics are proposed to boost new diagnostic techniques, surgery and drug development. As a new problem and limitation, the diagnostic and therapeutic relations are foundation for restricting patients growing and potential incurability in life times. This Article addresses it for inviting barrier breaking in knowledge and rollout new diagnostic-therapeutic techniques for this pattern of pulmonary disease.

Keywords: Pulmonary nodules, drug treatment, antibacterial, disease diagnosis, surgery

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History

The popularity of regular checking by computerized tomography discovers a dilemma phenomenon—wide spread of pulmonary nodules in asymptomatic adults.^{1,2} Despite this new discovery and clinical urgency, no well-formed therapeutics can be based from existing knowledge.

Many diagnostic and therapeutic options are proposed. The potential threat and uncertainty for therapeutics are debated. The characteristics of pulmonary nodules and different pathogenesis in image and biomarkers welcome and invite new therapeutic paradigms. Knowledge exchanges and technical breakthroughs (advanced diagnosis and personalized medicine) are coming.¹

Table 1 Diagnostic and therapeutic relation for pulmonary nodules

Pathogenesis	Therapeutics & drug selection
Pulmonary tuberculosis	Antibacterial combination
Viral infections	Antiviral or herbal therapies
Lung cancer or metastasis	Surgery or drug therapies
Long disease observation	Review, preparedness & disease eradication
Immune dysfunction	Food, sports or medications

Diagnostic and pathology relations

As a first impression, lung cancer or metastasis are attributed. Surgical indication and procedure optimization should be studied.³ Therapeutic broadening and improvements should be considered;

- Nodule images specifications.
- Big data analysis and streamlines.
- Cancer growth or metastasis therapeutic studies.³
- Drug development, evaluative architecture or clinical validating.^{4,5}
- Traditional medicine, like herbal medicine or acupuncture.⁶⁻⁹
- Lung infection, vascular clotting and cardiovascular diseases are associated.¹⁰
- Different surgery attempting.^{2,3}
- Immune system dysfunction or loss.^{11,12}
- Personalized medicine.¹³⁻¹⁶
- Clinical treatment studies.¹⁷⁻¹⁹

- Artificial intelligence supports.²⁰⁻²⁴

New chapters

At present knowledge, pulmonary nodules are not malignant diseases in 100% rates. Respiratory system infection, blood coagulation, and many underlying diseases (cardiovascular and overweight) might be disease origin or complication. These kinds of therapeutic or surgery preparedness should be investigated.

Optimizing therapeutics is a key issue for pulmonary nodule managements. It should not be too complicated or over-simply. More pathophysiological, modern diagnosis and therapeutic studied is the first priority and renewed. Main avenues are;

- Quickly differentiating if it is a normal tissues or malignancy. Plasma tumor cells or cancer biomarkers should be determined.
- Drug sensitivity testing can possibly be used for malignant therapies.^{15,16} With this procedure, drug selection optimization and selections can be achieved.
- Developing a variety of different drugs to suit with various condition of patients;
- Data analysis supported by artificial intelligence (AI) can select effective drugs.²⁰⁻²⁴
- Further investigation of pulmonary nodule development and treatments in new era.²²

Conclusion

Medical practice should be investigated for different patients. Thus, we can be prepared for growing complicated conditions in the clinic.

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