Traditional Chinese medicine: empowering tuberculosis prevention and control

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Dear Editor,

Tuberculosis (TB) is an airborne chronic infectious disease, posing long-lasting challenges and causing extensive health crises and deaths to humanity throughout history, despite existing prevention and treatment methods. The latest TB statistics report released by the World Health Organization in 2023 pointed out that, in 2022, the world recorded approximately 10.6 million new confirmed cases of TB. Among them, China accounted for about 748,000, around 7.1% of the total [1].

According to the monitoring data and death statistics from China’s Center for Tuberculosis Prevention and Control, it is analyzed that there were approximately 748,000 newly detected cases of tuberculosis in China in 2022. This implies that around 52 out of every 100,000 Chinese citizens were affected by TB.

Like many other countries, “seeking medical advice due to symptoms” is the main way to find TB patients in our country. Data shows that globally, at least 40% of TB cases have not been diagnosed. The transmission of tuberculosis caused by undiagnosed patients accounts for 70% of community transmission. Hence, the main problem in TB prevention and control lies in early detection.

Within all TB cases, drug-resistant tuberculosis has become a substantial public health threat. The treatment of these diseases is not only costly but also requires a long treatment period and typically results in relatively low recovery rates and high mortality risks. Furthermore, the resistance to the first-line treatment drug rifampicin has also become a growing concern in the medical field.

Currently, TB treatment internationally mainly relies on chemical drugs and is supplemented by surgery and interventional procedures. However, the patient’s intolerance to certain drugs and frequent adverse reactions, unsuccessful surgical treatments, and the increasing occurrence of drug resistance are not uncommon. Surgery also carries the risk of relapse. Therefore, conquering TB presents certain challenges. Recently, however, the continuous development and perfection of the traditional Chinese medicine integrated treatment system have greatly made up for the deficiencies in Western medical treatment for TB.

Western medicine’s arsenal of anti-tuberculosis drugs are limited, with the introduction of new drug research and development slow, and few candidate drugs. The efficacy of drugs currently under clinical trials yet remains to be confirmed. Both first-line and second-line anti-tuberculosis drugs in Western medicine exhibit cross-resistance, along with significant adverse reactions, making them less effective for drug-resistant and immunocompromised tuberculosis patients. According to World Health Organization estimates, over half a million new cases of multi-drug resistant TB (MDR-TB), and rifampicin-resistant TB (RR-TB) emerged globally in 2019, with 20.1% of these drug-resistant patients also demonstrating resistance to fluoroquinolones. Currently, the MDR-TB situation in China is severe, with a cure rate for MDR-TB achieving only about 54% [2]. Furthermore, the main clinical manifestations of TB such as coughing, hemoptysis, fatigue, low-grade fever, night sweats, and weight loss persist throughout the patient’s illness and Western medicine cannot completely alleviate these symptoms. Chinese medicine offers a variety of treatment methods, and comprehensive therapies such as internal and external treatments are effective for TB at different locations, reducing the need for surgery [3].

From the perspective of traditional Chinese medicine, TB can be categorized into diseases such as “pulmonary consumption”, “suspected drink”; “branch drink” and “accumulation”, depending on the anatomical location of the disease [4].

Taking the common types of pulmonary tuberculosis and lymphatic tuberculosis as examples, traditional Chinese medicine classifies pulmonary TB as “pulmonary consumption”, explaining the cause as “consumption insects corrode the lungs” leading to lung Yin damage, which further results in Yin deficiency internal heat and Qi Yin deficiency, making the treatment more complicated. Chinese medicine can effectively alleviate the toxic reactions of TB through the use of Fanghuo Pills, Baili Gujin Decoction, Yangjin Qingfei Decoction, and formulated drugs like Tuberculosis Pills, Anti-consumption Capsules, etc. Chen Jinshan and Lu Xizhen conducted a randomised controlled trial of the adjuvant chemotherapy regimen Fuzheng Anti-consumption Capsules (composed of Artemisia annua leaves, turtle shell, Dictamnus alatus, ebony, purple asters, hundreds of parts, ten great merit leaves, Codonopsis, baked Atractylodes, Angelica, Huai yam, corus, and Liquiritum lucidum) in the treatment of 43 patients with MDR-TB [5]. Both groups were treated with the 8Pa-L-Z.E.5m regimen, but the treatment group of 22 patients also took the Anti-consumption Fuzheng Capsule during the first three months. The treatment group’s sputum smear conversion rate was 95.5%, higher than the control group’s rate of 63.6%. On the other hand, tuberculous lymphadenitis falls under the scheme of “scrofula” in TCM. In contrast, western medicine often relies on surgical intervention for advanced-stage cases of tuberculous lymphadenitis, facing dual challenges of treatment difficulty and inadequacy of local drug therapy. Research by Gao Minxing of a topical regimen of Compound Wufengcao Liquid (Wufengcao 2,000 g, baiji 240 g, cat’s claw 400 g) to treat ulcerative tuberculous lymphadenitis showed improved wound healing rates and reduced necrotic debris removal time [6]. Additionally, no significant adverse reaction was observed, and the treatment was safer and more effective than isoniazid and kanganuxin solution.

At this point, the external treatment methods of Chinese medicine, such as Chinese medicine application, drug ultrasonic transdermal, Chinese medicine fumigation, surgical incision and promoting muscle growth, etc., have demonstrated its unique strengths in solving the above problems [7].

At the same time, with the advancement in pharmacy and drug testing technology, using the multi-target properties of Chinese medicine to combat tuberculosis has become a new trend in treatment research. Conducting research on the antibacterial components in traditional Chinese medicine, and identifying the specific targets of drug action, provides a fresh perspective for the treatment of tuberculosis. Studies have shown that small molecular components in Chinese medicine can antagonize Mycobacterium tuberculosis (MTB) through various pathways, such as adjusting cell autophagy programs, inhibiting the activity of key enzymes needed for MTB’s survival, reducing the manufacture of overall cell protein, optimizing host immune response, and adjusting the activity of various inflammatory factors, thus playing a role in inhibiting or eliminating MTB [8].

In the field of TB treatment, traditional Chinese medicine, with its profound practical experience, has made up for the deficiencies of traditional Western medicine and surgical treatment. Treatment strategies combining Chinese and Western medicine can effectively...
improve treatment effects, regulate patients’ constitutions comprehensively, thereby reducing the recurrence rate of the disease.

The modern death rate of tuberculosis is rising, the number of drug-resistant tuberculosis patients is increasing, and there is a limited choice of treatment options for highly drug-resistant tuberculosis patients. Especially for those patients who are extremely immunocompromised and drug-resistant to many drugs, the current anti-tuberculosis therapy seems inadequate. In this case, Chinese medical treatments are being promoted, emphasising the relief of patients’ pain, improving their quality of life and prolonging their lives as much as possible, as an enhancement and refinement to Western medical methods. The use of traditional Chinese medicine can also alleviate the economic burden on patients and the country brought about by various Western medical treatments, enabling patients to “treat with peace of mind, treat stably”.

With the strong support of traditional Chinese medicine and the state, the diagnosis time for tuberculosis has been reduced from two to three weeks to four to six hours. Currently, China is mainly implementing three major actions in the field of tuberculosis prevention and treatment, namely the care action for tuberculosis patients, the tuberculosis-free community action, and the all-society mobilization action.[9] Among them, a tuberculosis-free community refers to a community with a tuberculosis incidence rate of less than 10/100,000 in the permanent population.

In the future, the hope is to move from point to point, line to surface, from tuberculosis-free communities to tuberculosis-free counties, tuberculosis-free cities, and tuberculosis-free provinces, and even to achieve the goal of ending the epidemic of tuberculosis in our country.

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Competing interests

The authors declare no conflicts of interest.

Abbreviations

TB, Tuberculosis; Mtb, Mycobacterium tuberculosis; MDR-TB, multi-drug resistant Tuberculosis.

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