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**Diagnostic value of metagenomics next-generation sequencing technology in disseminated strongyloidiasis**

Song P *et al.* mNGS for disseminated strongyloidiasis

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**Abstract**

The symptoms of disseminated strongyloidiasis are not typical, and it is difficult for clinicians to identify strongyloidiasis in some non-endemic areas. We report a 70-year-old woman who was diagnosed with Guillain-Barré syndrome due to autonomic disturbance, symmetrical bulbar palsy, and lower-motor-nerve damage in the extremities; her symptoms continued to worsen after hormone and immunoglobulin therapy. Later, parasitic larvae were found in the patient's gastric fluid, and metagenomic next generation sequencing (mNGS) detection of bronchoalveolar-lavage fluid also found a large number of *Strongyloides* roundworms. The patient was diagnosed with disseminated strongyloidiasis. The patient was given albendazole for anthelmintic treatment, but died two days after being transferred to the intensive care unit due to the excessive strongyloidiasis burden. In recent years, mNGS has been increasingly used in clinical practice, and is becoming the main means of detecting *strongyloides stercoralis* in non-endemic areas. Especially during the corona virus disease 2019 pandemic, mNGS technology has irreplaceable value in identifying the source of infection.

**Key Words:** Metagenomics; Next-generation sequencing; Disseminated; Strongyloidiasis

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**Core Tip:** Metagenomic next-generation sequencing (mNGS) has a high sensitivity in identifying pathogen species. As a new pathogenic detection method, it plays an irreplaceable role in unexplained infectious diseases. It can provide important information for clinicians to identify new pathogens, non-tuberculosis mycobacteria and parasites. With the continuous improvement of clinical laboratory diagnostic technology, mNGS has been used more and more widely in clinical practice, and has become the main means to identify parasites in non-endemic areas.

#### TO THE EDITOR

We read an interesting case report by Zheng JH *et al*<sup>[1]</sup>. A man with rheumatoid arthritis who was previously treated with multiple immunosuppressants. He was admitted with small bowel obstruction, cough, and peripheral neuropathy. The authors found active *Strongyloides* larvae in stool and sputum smears. After treatment with ivermectin combined with albendazole, the patient's symptoms improved significantly.

We agree with the author's point of view in the discussion section, ivermectin is currently the most effective treatment for strongyloidiasis<sup>[2]</sup>, and the author's combined use of albendazole and ivermectin has achieved a good therapeutic effect. However, there is no commercial preparation of ivermectin in mainland China, so we want to know whether the author has been approved by special procedures and used veterinary ivermectin. The sharing of this experience will help in the treatment of patients in non-endemic areas.

According to the estimation, the global prevalence <sup>2</sup> is ten times higher than previous estimates, ranging between 30 to 100 million people<sup>[3]</sup>. Covid-19 has become a global pandemic in the past three years, and some severe patients may need to receive high-

dose hormone and immunosuppressive therapy, which is a potential risk factor for severe parasitic infections<sup>[4]</sup>. The Huashan Hospital Affiliated to Fudan University, where the author is located, is home to the top disciplines of infectious diseases in mainland China, which can identify the species of parasites in a short time. However, in some non-endemic areas of parasitic diseases, many inspectors have difficulty identifying the parasite species under the microscope, thereby delaying the treatment of patients. In recent years, the application value of mNGS technology in the field of infectious etiology has received more and more attention and recognition. Because its random primer amplification is undifferentiated, it has higher sensitivity than traditional detection methods, and is a breakthrough technology in the field of pathogen detection. At present, there are preliminary achievements in the clinical application of this technology at home and abroad, including case reports, case series reports, large sample studies, involving bone and joint infections, skin and soft tissue infections, lung infections, central nervous system infections, *etc.* The research results show that mNGS has obvious advantages over traditional detection methods in detecting pathogens<sup>[5-6]</sup>. In the future, mNGS may overturn the traditional pathogen detection process and become the dominant diagnostic method. We have <sup>1</sup> a 70-year-old female who was diagnosed with Guillain-Barre syndrome due to her combination of autonomic nervous disorder, symmetrical bulbar palsy and motor nerve injury of lower limbs. After adequate hormone and immunoglobulin treatment, her symptoms did not improve. During treatment, adult parasites were found in the gastric juice of the patient (the type of parasite could not be identified), diffuse lesions in both lungs of a patient with <sup>1</sup> extensive Strongyloid sequences detected by mNGS in bronchoalveolar lavage fluid, the patient was diagnosed with disseminated strongyloidiasis. The patient was given albendazole for deworming, but the patient died from a high strongyloidiasis burden.

From this interesting case report and our case, it can be concluded that the high-risk population with suppressed immune function should be aware of the threat of parasitic infection and actively prevent infection. Patients receiving long-term and sufficient

hormone treatment should take albendazole every three months to prevent strongyloidiasis<sup>[7]</sup>.

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