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EDITORIAL (BY INVITATION)

Towards a timely diagnosis of spinal tuberculosis

Andreas K. Demetriades[1]

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Tuberculosis (TB) remains a major global public health concern, even though it is a treatable and curable disease. Statistics from the World Health Organization (WHO) show that TB occurs all over the globe; there were 9.6 million new cases in 2014, a prevalence of 133/100,000, and 1.5 million deaths. The largest incidence was in the WHO South-East Asia and WHO Western Pacific regions, where 58% of all new global cases were encountered. Furthermore, the incidence was >10 times greater in low-income countries, and the mortality >20 times greater than in high-income countries. This reflects, in part, the large inequality of access to health services both for diagnosis and for treatment [5].

In Europe, TB continues to present a major public health challenge. It is estimated that approximately 340,000 new cases and 33,000 deaths were reported in 2014, mostly from eastern and central European countries. A false sense of security might be conveyed when considering data showing that in the last 10 years there has been a decrease of 5.2% per annum in new cases of TB. In fact, notification rates have remained ~8 times higher in high-TB-priority countries than in the rest of the WHO Europe region [1].

With the ongoing globalization, migration, and mixing of populations, TB is now more prevalent in certain pockets of Europe than it has been for a very long time. The WHO Regional Office for Europe confirms it is most frequently seen amongst young adults in the eastern part of the region, and among migrants and the elderly native population in Western European countries. TB is intrinsically connected to social determinants of health (e.g., poverty, migration, social marginalization) [1].

Another challenge is that treatment results in Europe are not ideal; 76% treatment success in new/relapsed cases in 2013, and approximately 50% treatment success in multidrug-resistant TB (MDR-TB) in 2012. Additionally, a persisting further challenge has been the timely diagnosis.

Indeed, microbiological confirmation of TB infection of the spine can be typically very slow. A relatively small but prospective study of nine patients employed multiplex PCR in obtaining the diagnosis [3]. Seven out of nine patients were positive for TB on eventual diagnosis, with multiplex PCR having one false-negative case; the authors speculate due to bacterial lysis during processing or anti-TB treatment having commenced prior to the test. Sensitivity was 85.7% and specificity was 100%. By comparison, AFB testing was only positive in 66.6% and culture was only positive in 22.2% of cases.

Meta-analysis data has shown an overall pick-up rate of smear and culture as 37 and 66.2%, respectively. As such, smear has a low pick-up rate, whereas culture has a better pick-up rate, but its main disadvantage is the length of time required.

Differences in time-to-diagnosis within this study were significant: <24 h for multiplex PCR vs. 45 days for culture [3].

PCR methods have been promising in TB diagnosis [2, 4]. Meena et al. have shown that multiplex PCR works for spinal TB too, using three target genes, namely IS6110, protein b, and MPB64. The major advantage reported in multiplex PCR in this study was the timely diagnosis over the traditional culture and smear techniques, which missed 77.8 and 33.3% of diagnoses [3].

Overall, the authors' stated three advantages with multiplex PCR over traditional diagnostic methods are worthy of consideration:

✉ Andreas K. Demetriades
andreas.demetriades@gmail.com

[1] Western General Hospital, Edinburgh, UK

– high sensitivity and specificity
– rapidity of diagnosis, and
– ability of diagnosis in paucibacillary infection.

As such, multiplex PCR may indeed be the better diagnostic tool in case of suspected spinal extra pulmonary tuberculosis.

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