

Follow-up and report on active trachoma in Zabol, Iran, prompted by Sharifi-Rad and Fallah's observations published in May 2016

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Sharifi-Rad and Fallah published a paper reporting data on ocular *Chlamydia trachomatis* infection, determined by Amplicor PCR [1]. In June 2014, amongst 150 rural schoolchildren in Zabol, Iran (located in a zone bordering Afghanistan), they found nine girls and four boys to be positive this infection by PCR. We are grateful for their interest in an important global cause of blindness, but despite extensive communications and requests, we could not obtain further details from them, learn more about the prevalence of clinically diagnosed active trachoma in their sample of children or discover the identity of the specific communities visited in order to allow formal reassessment of the relevant population.

In the absence of this guidance, in March 2017, we performed a targeted screening in primary schools of two border zone counties, Hirmand and Zehak (Fig. 1). The investigation protocol was reviewed and approved by the Zabol Deputy of Public Health (#b14541). The screening flow is depicted in [Supplementary Diagram 1](#).

Amongst 16 957 children aged 7–12 years examined, there was only one case of active trachoma (diagnosed as upper tarsal

follicular conjunctivitis by a subspecialist in cornea and anterior segment of the eye (SFM) with a portable slit lamp (SK Med LS-1B, Chongqing, China). An expert ophthalmologist passed a Dacron swab firmly three times over the upper right tarsal conjunctiva of that patient, spinning 120 degrees between each pass, then placed it in a sterile microtube at 4°C, and within 10 hours of collection sent it to Bahar Medical Laboratory, Tehran, Iran, where it was stored at –80°C until processing.

DNA was extracted by QIAamp DNA Blood Mini Kit (Qiagen, Hilden, Germany). Primers targeted regions of the *hsp60* and *hsp70* genes, which are highly conserved among *Chlamydia trachomatis* serovars but which vary from the corresponding human sequences. SYBR Green was used for amplicon detection. Thermal cycling was carried out using a LightCycler v.1.5 Real-Time PCR (Roche, Berlin, Germany), with *C. trachomatis* serovar A DNA used as a positive control. Our case's PCR test was negative.

PCR is highly specific for *C. trachomatis* infection, but as a result of its imperfect sensitivity [2] and the kinetics of infection and disease [3], a negative PCR does not allow one to set aside a clinical diagnosis. We thus conservatively considered the case to be trachomatous. Therefore, we estimate a prevalence of active trachoma of 0.006 (Clopper-Pearson exact 95% confidence interval, 0.0001–0.03). The upper limit of the confidence interval is still far less than the 5% threshold set by the World Health Organization as the active trachoma component of 'elimination as a public health problem' [4] and is likewise considerably lower than the estimates reported by Sharifi-Rad and Fallah, which in any case were figures for the prevalence of ocular *C. trachomatis* infection rather than estimates of the prevalence of active trachoma. In recent years, the border with Afghanistan has become more tightly controlled, and one may hypothesize that this relates to the likely disparity of the earlier findings with the current ones. However, our findings are compatible with the two latest formal surveys in the region, published in 2006 and 2015 [5,6].

Iran is in the process of seeking formal validation from the World Health Organization of trachoma's elimination as a public health problem. To keep trachoma at bay, we emphasize the importance of surveillance and of ensuring provision of clean water and environmental sanitation in border zones and in deprived and rural communities. However, for the time being, and for formal purposes, we believe that there is strong evidence to support a claim that active trachoma has been eliminated from Iran.

Conflict of interest

The authors alone are responsible for the views expressed in this letter and they do not necessarily represent the views,



FIG. 1. Geographical zone of two border counties of Hirmand and Zehak in current targeted screening.

decisions or policies of the institutions with which they are affiliated.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.nmni.2017.08.001>.

References

- [1] Sharifi-Rad J, Fallah F. Trachoma prevalence in rural areas of eastern Iran. *New Microbe New Infect* 2016;11:82–3.
- [2] See CW, Alemayehu W, Melese M, Zhou Z, Porco TC, Shiboski S, et al. How reliable are tests for trachoma? A latent class approach. *Invest Ophthalmol Vis Sci* 2011;52:6133–7.
- [3] Solomon AW, Peeling RW, Foster A, Mabey DC. Diagnosis and assessment of trachoma. *Clin Microbiol Rev* 2004;17:982–1011.
- [4] World Health Organization. Validation of elimination of trachoma as a public health problem. WHO/HTM/NTD/2016.8. Geneva: World Health Organization; 2016.
- [5] Zare M, Aghadoost D, Delavari A, Mostafaii G, Hajjafari M, Parsikia A. Rapid assessment of trachoma (RAT) in south provinces of Iran. *Bina J Ophthalmol* 2006;11:432–8.
- [6] Katibeh M, Hosseini S, Yaseri M, Aminifar MN, Mahdavi A, Jafarinasab MR, et al. Prevalence and risk factors for trachoma in rural areas of Sistan-va-Baluchestan Province, Iran: a population-based study. *Ophthalmic Epidemiol* 2015;22:208–13.