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Full Length Research Paper

Trachoma knowledge in Southern Khorassan, Iran

Gholamhossein Yaghoobi[1], Mohammad Reza Miri[1]*, Mohammad Ali Yaghoobi[2]

[1]Birjand University of Medical Science, Iran.
[2]Internal Medicine Mashhad, University of Medical Science, Iran.

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Trachoma is a keratoconjunctivitis that causes ocular infection with Chlamydia trachomatis (Ct). The chronicity and reinfection leads to increasingly severe inflammation that can damage the conjunctiva and cornea. The WHO (World Health Organization) is in alliance with the Global Elimination of Trachoma by 2020. This safe strategy includes: surgery for trichiasis, antibiotics for active trachoma, facial cleanliness, and environmental improvement. Although there is evidence which supports effectiveness of this approach, will it be eliminated by 2020? There are many old people who suffer from trachoma sequel in Southern Khorassan, Iran, thus discrepancy of clinical versus paraclinical diagnosis of active trachoma especially in a suspicious case remains unclear. Therefore, our negative result according to PCR approaches among 10 cases of clinically suspicious or definite trachoma will be an emphasis on clinical diagnosis.

Key word: Trachoma, diagnosis, prevalence, elimination.

INTRODUCTION

Trachoma is an ancient disease, described clearly in the Ebers papyrus of 1500 BC (Mufioz and West, 1997) and well known to the ancient Greeks. The disease used to be common in Europe and North America; many of the eye hospitals founded in these regions in the 19th century were established specifically for trachoma treatment. The disease is the second leading cause of blindness worldwide, and continues to be hyper endemic in many areas of Africa, Asia, and also the Middle East (Mufioz and West, 1997; Mabey et al., 2003)

Trachoma gradually disappeared from the developed countries during the 20th century. Most of trachoma disappearance was due to improved living standards, socio-environmental conditions and also newly available sulpha drugs. There is a poor correlation between clinical examination and PCR. However, a large proportion of people with follicular trachoma (TF), including some of those with intense inflammation (TI), do not have demonstrable organism on spot testing (Taylor, 2009; Solomon et al., 2004).

Trachoma is the world's leading cause of blindness. With the advent of antigen and DNA detection methods for diagnosing Chlamydia infection, it became clear that even under optimal conditions, isolation was < 100% sensitive for the detection of chlamydiae in the eye and genital tract. Indeed, the polymerase chain reaction (PCR) is more sensitive than any other techniques for diagnosing Chlamydia infection of genital tract (Bailey et al., 1994). A novel nucleic acid amplification tests (NAATs) based on amplification of rRNA has been developed. The rRNA-based test appears to have significantly greater sensitivity than PCR for the detection of ocular Chlamydia trachomatis (Ct) infection in children in trachoma-endemic villages (Yang et al., 2009).

In a study on the Australian population, the prevalence of trachoma trichiasis was 6.1% and trachoma corneal opacity was 3.3%. They concluded that both of these were associated with advancing age and female sex. To compare with previous estimates, the prevalence of trachoma trichiasis and corneal opacity appears to be decreasing in Australian population (Landers et al., 2010).

There are no documented works to determine prevalence of trachoma according to population based

*Corresponding author. E-mail: miri_moh2516@yahoo.com. Tel: 985614443001-9. Fax: 985614445402

study in this area, thus, this report is a 4-year clinically based suspicious cases versus PCR results.

Hence, we are encountering a trachomatic sequel in many old patients but there is discrepancy in clinical and paraclinical proof in diagnosing Chlamydia trachomatis; therefore, this study was done to determine PCR positive trachoma among chronic trachomatous inflammation intense or follicular conjunctivitis which were symptoms of trachoma.

MATERIALS AND METHODS

All visitors to the eye clinic of Vali-Asr hospital, who were suspected to have had trachoma for over four years, were introduced to Pishgam Laboratory for PCR test. The 10 individuals were aged between 10 years and above. All of them were living among the local area of southern Khorassan with a history of 6 months of non antibiotic consumption prior to this study. Among trachoma classification scale such as FPC (follicles, papillae, cicatrices) and MacCallan classification, the simplified WHO system was designed for this study. This grading criteria consist of: TF (trachomatous inflammation follicular) the presence of five or more follicles at least 0.5 mm in diameter in the central part of the upper tarsal conjunctiva; TI (trachomatous inflammation intense) pronounced inflammatory thickening of the upper tarsal conjunctiva obscuring more than half of the normal deep tarsal vessels; TS (trachomatous conjunctival scarring) the presence of easily visible scars in the tarsal conjunctiva; TT (trachomatous trichiasis) at least one eyelash rubs on the eyeball and CO (corneal opacity) easily visible corneal opacity over the pupil so dense that at least part of the pupil margin is blurred when viewed through the opacity. The most Participants who had suspicious trachoma and showed the TI grading as described above enrolled in this study. The few cases of follicular or intense trachomatous inflammation which represented active disease also were sent for evaluation in this study. Anterior segment examination was performed and suspicious cases were documented to do PCR.

After instillation of anesthocain 0.5% eye drop, individuals with clinical evidence of active stage of disease including TF, TI or both a sterile swab were held horizontally and passed across the length of the upper tarsal conjunctiva to collect sampling**.** We took precautions to prevent carry-over contamination of swabs head other than the person conjunctiva. The swabs were placed in tubes and kept on ice (4°C), then frozen at -20°C for 72 h and processed in the Pishgam laboratory. If the mucosal layer of the conjunctiva has not assimilated enough microbial volume for DNA extraction, the resampling is taken one week thereafter. The DNA extraction approach was (QIA amp DNA kit, Qiagen. Inc) through the Hot Start qualitative PCR using specific primers and fluorescent probe (FLASH). With any run of working session, one positive and one negative Laboratory control were considered.

RESULTS

However, there are many old people suffering from trachoma sequel (Figure 1) in Southern Khorassan, Iran, this study was a clinically based diagnosis. In this survey in spite of clinical suspicion, the paraclinical polymerize chain reaction (PCR) was not able to show Chlamydia trachomatis infection among 10 cases of clinically doubtful trachoma during the 4 years of our ophthalmology practice. The most cases were males and the mean age was 25 years (14 to 61 year); of these uncertain cases, 40% were 10 years or older and 60% of them were 20 years or older within this district. The prevalence of clinical trachoma among these patients who have chronic conjunctivitis was compatible to WHO trachoma classification, TI. The PCR test was negative for the pathogen Chlamydia trachomatis in these patients who were under treatment other than trachoma conjunctivitis, but by the development of Von arlet-line in one case thereafter (Figure 2) it remained a challenge in diagnosing trachoma.

DISCUSSION

Our findings revealed a profound reduction of trachoma in this place as we had stated among older people who have sequel of trachoma. But as described by Lansingh and Carter (2007), a high prevalence of trachomatous scarring, corneal opacity, and trichiasis in the adult population is an indication of common frequency of past infections, but does not tell us much about current infection levels (Lansingh and Carter, 2007).

This improvement as we are not be able to detect clinically as described by WHO trachoma classification (Hu et al., 2010) or by establishment of PCR test among 10 suspicious cases are in good agreement with recent improvements in many health variables as opposed to that of many years ago (Burton, 2007). In geographic areas of relatively low active trachoma prevalence, two recent studies highlight the poor correlation of clinical assessment and laboratory testing (Lansingh and Carter, 2007). It note worthy to mention, that our suggestion has reduced or nearly eliminated trachoma during our near 20 years of ophthalmology practice in this area as against previous research in this place (Yaqubi and Anani, 2002), the other interesting point is the trachoma memorial report of Shams in his first journey to Dezful; at that time, trachoma was very prevalent that he described the Dezful city as a city of the blind (Shams, 1993). Therefore as stated by See et al. (2011) and Keenan et al. (2010), the difficulties in diagnosing stem shows that there is no accepted golden standard to accurately determine chlamydial trachoma; in spite of responding to antibiotic treatment, the disease surveys are based on prevalence grading clinical criteria which are frequently discordant (See et al., 2011); Keenan et al., 2010).

The detection of Chlamydia trachomatis infection still has many conflicts. On one hand trachoma control programmes persist on diagnosis of trachoma by clinical signs; on the other hand research studies emphasize on establishment of the individual infection status. So, the development of various diagnostic tests from Giemsa staining, immunofluorescence with monoclonal antibodies, Enzyme-linked immunoassays, Nucleic acid amplification to rapid diagnostic test have been used to detect Chlamydia trachomatis, but there is no ‘Golden

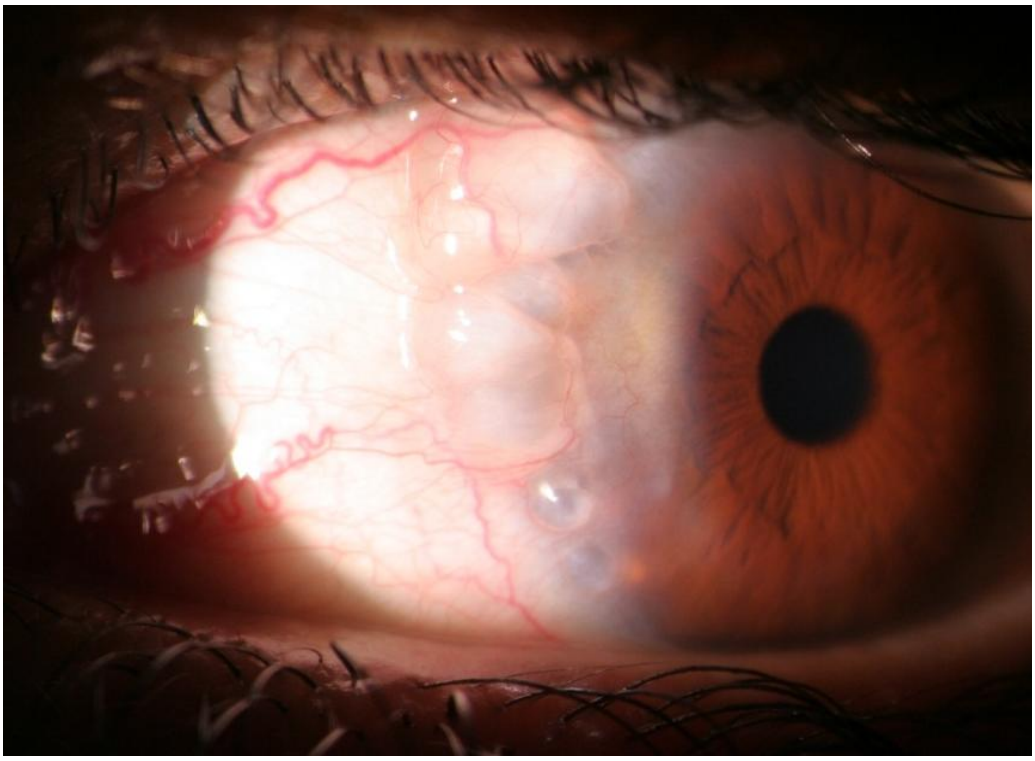

Figure 1. Trachomatous conjunctival cysts.

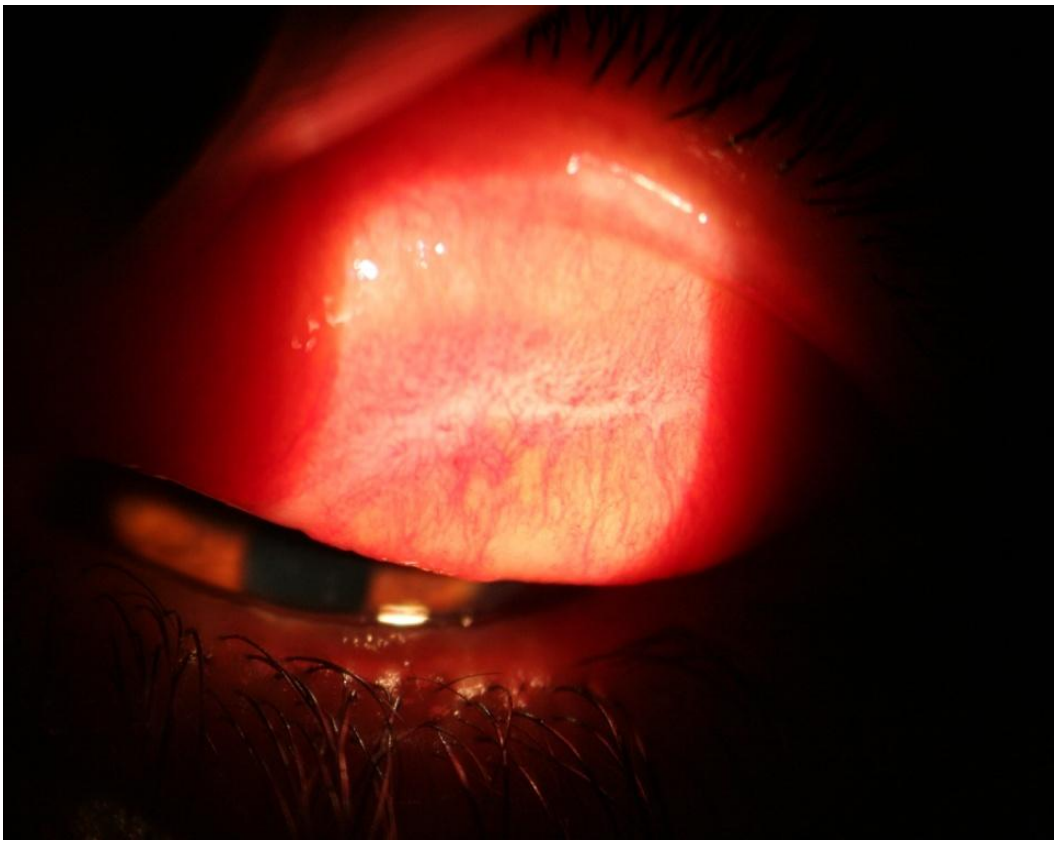

Figure 2. Von Arlet line.

Standard' test (Burton, 2007). According to laboratory assurance in the procedure for sampling quality, indeed is of no doubt in the detection of DNA extraction and this finding may be due to hypo endemic place or persistence of clinical signs for many weeks after the infection has been cleared.

In summary, it is not possible to absolutely claim that trachoma has been eliminated but other infectious diseases have been reduced with improvement of many health characters and old trachoma endemicity in this place. This suggestion is especially amenable in previous report of this place which showed few trachoma positive cases against that of non positive paraclinical findings in our current study. Our expectation in the reduction of trachoma prevalence will be a logical claim but we should not forget that trachoma sequel also appeared years later in the old aged population. Therefore diagnosing trachoma according to clinical findings in chronic conjunctivitis or other similar conjunctivitis will result in a more accurate paraclinical test. Therefore, other researches need to be conducted with large sample-size population studies to determine trachoma prevalence in this place.

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