

Tuberculous Meningitis in Adults in the Terms of Tertiary Prevention: Review of 22 Cases

Zohreh Aminzadeh, Tahereh Mahmoodi¹

Infectious Disease and Tropical Medicine
Research Centre, Shahid Beheshti University of
Medical Sciences, Tehran, Iran and The University
of Queensland Centre for Clinical Research,
The University of Queensland, Brisbane, Australia,
¹Shahid Beheshti University of Medical Sciences,
Tehran, Iran

Date of Submission: Jan 06, 2012

Date of Acceptance: Oct 08, 2012

Correspondence to:

Prof. Zohreh Aminzadeh,
Infectious Diseases Research Centre,
Loghman Hakim Hospital, Shahid Beheshti
University of Medical Sciences, Tehran, Iran.
E-mail: zohrehaminzadeh@yahoo.com

How to cite this article: Aminzadeh Z, Mahmoodi T. Tuberculous meningitis in adults in the terms of tertiary prevention: Review of 22 cases. *Int J Prev Med* 2013;4:496-7.

DEAR EDITOR,

High mortality due to tuberculous meningitis (TM) has been mentioned because of delayed diagnosis and treatment.^[1,2]

A retrospective study was conducted on 22 admitted patients in Loghman Hakim hospital, Tehran, Iran, between October 2005 and August 2009. Tuberculous meningitis is defined as follows. Definite diagnosis of TM with presence of clinical meningitis signs (neck rigidity and abnormal cerebrospinal fluid [CSF] parameter) in addition to acid-fast bacilli or tuberculosis-polymerase chain reaction (TB-PCR) positive in the CSF. Probable TM was considered when clinical meningitis signs were accompanied by at least one of following condition: (1) Suspected active pulmonary tuberculosis based on chest X-ray, (2) acid-fast bacilli found in any sample apart from the CSF, and (3) clinical evidence of other extra pulmonary tuberculosis. Possible TM was considered when clinical meningitis signs accompanied by at least four of the following: (1) A history of predominance of lymphocytes in the CSF, (2) duration of illness more than five days, (3) CSF/blood glucose ratio <0.5, low consciousness, yellow CSF, focal neurological signs, and (4) A good response to anti-tuberculosis chemotherapy.

A total of 18 men and 4 women with a mean age of 29.5 ± 13.5 (18-73) were enrolled. Five (23%)

of them were diagnosed with a definite diagnosis, two (9%) with a probable diagnosis, and fifteen (68%) with a possible diagnosis. The length of symptoms before admission, in 21 (95.5%) patients, was five days or more. More than half of the patients revealed neck stiffness, but Kernig and Brudzinski's signs were found at 45.5% and 23% of patients, respectively. Cranial nerve palsy was found in five (23%) patients that two of them (9%) showed VI cranial nerve palsy and three (13.5%) patients were involved by VII cranial nerve palsy. The fever was the most common clinical manifestation (86.5%). Vomiting, anorexia, low consciousness, and seizure were found in 73%, 32%, 41%, and 9%, respectively. Seventeen (77%) patients were discharged from the hospital. Five (23%) patients died and the mortality rate in the first, second, and third week of their admission in the hospital was 2 (9%), 1 (4.5%), and 2 (9%), respectively. Although an effective treatment had been administered for all patients, low consciousness continued in five cases (23%). There was a significant association between the patient's deaths with low consciousness while they were taking anti-tuberculosis treatment and corticosteroid ($P < 0.05$).

In our study, the mortality rate was 23%. Although 41% of those patients were seriously ill at admission time at the stage III based on Medical

Research Council Staging,^[3] the mortality rate was lower than Sultas,^[4] Verdon,^[2] and Cagatay^[5] studies (27.8%, 64%, and 43.5%, respectively). Moreover, there was a significant association between the rates of death with low consciousness under taking treatment. This finding was in agreement with Verdon research.^[2] Hosoğlu and *et al.*^[1] findings that showed marked alteration in consciousness or coma might predict fatal outcome. In our study, all the deaths occurred within the first three weeks after admission. In Vendor study^[2] 70.5% of the patients died within the first three weeks after admission.

TM continues to pose a diagnostic problem. A high index of clinical suspicion is absolutely essential.

REFERENCES

1. Hosoğlu S, Ayaz C, Geyik MF, Kökoğlu OF, Ceviz A. Tuberculous meningitis in adults: An eleven-year review. *Int J Tuberc Lung Dis* 1998;2:553-7.
2. Verdon R, Chevret S, Laissy JP, Wolff M. Tuberculous meningitis in adults: Review of 48 cases. *Clin Infect Dis* 1996;22:982-8.
3. Medical Research Council (MRC). Streptomycin treatment of tuberculous meningitis. *Lancet* 1948;1:497-500.
4. Sütla P N, Ünal A, Forta H, Senol S, Kirbas D. Tuberculous meningitis in adults: Review of 61 cases. *Infection* 2003;31:387-91.
5. Cagatay AA, Ozsut H, Gulec L, Kucukoglu S, Berk H, Ince N, *et al.* Tuberculous meningitis in adults-experience from Turkey. *Int J Clin Pract* 2004;58:469-73.

Source of Support: Nil, **Conflict of Interest:** None declared.

INTERNATIONAL JOURNAL OF PREVENTIVE MEDICINE on Web

<http://www.journalonweb.com/ijpvm>

International Journal of Preventive Medicine now accepts articles electronically. It is easy, convenient and fast. Check following steps:

1 Registration

- Register from <http://www.journalonweb.com/ijpvm> as a new author (Signup as author)
- Two-step self-explanatory process

2 New article submission

- Prepare your files (Article file, First page file and Images, if any)
- Login into your area
- Click on 'Submit a new article' under 'New Article'
- Follow the steps (three steps for article without images and five for with images)
- On successful submission you will receive an acknowledgement quoting the manuscript numbers

3 Tracking the progress

- Click on 'In Review Article' under 'Submitted Articles'
- The table gives status of the article and its due date to move to next phase
- More details can be obtained by clicking on the Manuscript ID
- Comments sent by the editor and referee will be available from these pages

4 Submitting a revised article

- Click on 'Article for Revision' under 'Submitted Articles'
- Click on 'Revise'
- From the first window, you can modify Article Title, Article Type
- First Page file and Images could be modified from second and third window, respectively
- The fourth step is uploading the revised article file.
- Include the referees' comments along with the point to point clarifications at the beginning of the revised article file.
- Do not include authors' name in the article file.
- Upload the revised article file against New Article File - Browse, choose your file and then click "Upload" OR Click "Finish"
- On completion of revision process you will be able to check the latest file uploaded from Article Cycle (In Review Articles-> Click on manuscript id -> Latest file will have a number with 'R')

Facilities

- Submission of new articles with images
- Submission of revised articles
- Checking of proofs
- Track the progress of article in review process

Advantages

- Any-time, any-where access
- Faster review
- Cost saving on postage
- No need for hard-copy submission (except on acceptance images should be sent)
- Ability to track the progress
- Ease of contacting the journal

Requirements for usage

- Computer and internet connection
- Web-browser (preferably newer versions - IE 5.0 or NS 4.7 and above)
- Cookies and javascript to be enabled in web-browser

Online submission checklist

- First Page File (text/rtf/doc/pdf file) with title page, covering letter, acknowledgement, etc.
- Article File (text/rtf/doc/pdf file) - text of the article, beginning from Title, Abstract till References (including tables). File size limit 1MB. Do not include images in this file.
- Images (tiff): Submit good quality colour images. Each image should be less than 4096 kb (4 MB) in size

Help

- Check Frequently Asked Questions (FAQs) on the site
- In case of any difficulty contact the editor