Journal of Infection (2017) 74, 352–357

BIAM British Infection Association

www.elsevierhealth.com/journals/jinf

Bacterial meningitis in alcoholic patients: A population-based prospective study

Kiril E.B. van Veen [a,b], Matthijs C. Brouwer [a], Arie van der Ende [c], Diederik van de Beek [a,*]

[a] *Department of Neurology, Center of Infection and Immunity Amsterdam (CINIMA), Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands*
[b] *Department of Neurology, Medical Center Haaglanden, The Hague, The Netherlands*
[c] *The Netherlands Reference Laboratory for Bacterial Meningitis, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands*

Accepted 2 January 2017
Available online 5 January 2017

KEYWORDS
Bacterial meningitis;
Alcoholism;
Streptococcus pneumoniae;
Listeria monocytogenes;
Outcome

Summary *Objectives:* To study clinical features and outcome of community-acquired bacterial meningitis in alcoholic patients.
Methods: Patients with a history of alcoholism were selected from our nationwide, prospective cohort on community-acquired bacterial meningitis performed from March 2006 to October 2014. Data on patient history, symptoms and signs on admission, treatment, and outcome were prospectively collected.
Results: Of 1359 included episodes, 88 episodes (6%) occurred in 88 alcoholic patients. Seizures as presenting symptom were present in 18% alcoholic patients, and 23% presented with co-existing pneumonia. Causative organisms were *Streptococcus pneumoniae* in 76%, *Listeria monocytogenes* in 8%, and *Neisseria meningitidis* in 6% of patients. A high rate of systemic complications occurred with respiratory failure in 40% and endocarditis in 9% of patients. Outcome was unfavorable in 58% of alcoholic patients, and 25% died. Alcoholism was associated with unfavorable outcome in a multivariate analysis (OR 1.96; 95% CI 1.12–3.46; P = 0.019), but not with death (OR 0.76; 95% CI 0.35–1.68; P = 0.762).
Conclusion: Alcoholic bacterial meningitis patients often have an unfavorable outcome, which appears to result from a high rate of systemic complications, mainly respiratory failure. Seizures are common in alcoholic patients and warrant caution of development of an alcohol withdrawal syndrome.
© 2017 Published by Elsevier Ltd on behalf of The British Infection Association.

* Corresponding author. Department of Neurology, Center of Infection and Immunity Amsterdam (CINIMA), Academic Medical Center, University of Amsterdam, PO Box 22660, 1100DD Amsterdam, The Netherlands. Fax: +31 205669374.
E-mail address: d.vandebeek@amc.uva.nl (D. van de Beek).

http://dx.doi.org/10.1016/j.jinf.2017.01.001
0163-4453/© 2017 Published by Elsevier Ltd on behalf of The British Infection Association.

Introduction

Community-acquired bacterial meningitis is a severe infectious disease with high morbidity and mortality rates,[1] and is most commonly caused by *Streptococcus pneumoniae*.[2] The abuse of alcohol increases the susceptibility to bacterial infection by direct influence on cellular and humoral immune responses and indirectly through chronic liver disease, malnutrition and vitamin deficiencies.[3–5] We previously described characteristics of 27 alcoholic patients with bacterial meningitis identified in the national cohort on bacterial meningitis in the Netherlands from October 1998 to April 2002.[6] Over the past 15 years, the epidemiology and treatment of bacterial meningitis have changed.[7,8] Vaccines against pneumococcal disease, group C meningococcal disease and *Haemophilus influenzae* type b are routinely used in national immunization programs and have reduced the overall incidence and changed the distribution of causative pathogens.[7,9,10] Furthermore, the introduction of new treatments such as adjunctive dexamethasone, have improved the outcome of bacterial meningitis.[11] Here, we report on alcoholic patients identified from the national prospective cohort on community-acquired bacterial meningitis in the Netherlands from 2006 to 2014.[12] We studied clinical features, causative pathogens and prognostic factors in alcoholic adults with bacterial meningitis.

Methods

We conducted a nationwide, prospective cohort study on community-acquired bacterial meningitis. Methods have been described in detail previously.[12] Between March 2006 and October 2014, patients with bacterial meningitis over 16 years old were included. Bacterial meningitis was defined as a positive cerebrospinal fluid (CSF) culture or as the combination of a positive blood culture with a relevant pathogen, or positive PCR or antigen test in cerebrospinal fluid, with at least one CSF finding predictive of bacterial meningitis consisting of a CSF leukocyte count >2000 cells/mm^3, polymorphonuclear leukocyte count >1180 cells/mm^3, glucose level <1.9 mmol/L, protein level >2 g/L, or CSF/blood glucose ratio <0.23.[13]

Patients with a neurosurgical device, neurosurgical operation or procedure and patients with neurotrauma within one month of the onset of meningitis were excluded from the cohort.

Alcohol dependence or alcoholism was defined according to the diagnostic criteria of the National Institute on Alcohol Abuse and Alcoholism (NIAAA) as a persistent and progressive pattern of abnormally intense alcohol seeking behavior that, over time, results in loss of control over drinking, a preoccupation with drinking, compulsion to drink or be unable to stop drinking and the development of tolerance and dependence.[14] The interpretation of these criteria was left to the discretion of the treating physician. Strict quantitative criteria for the diagnosis of alcoholism (e.g. number of alcoholics consumptions per day) were not defined.

The presence or absence of alcoholism, together with data on patient history, symptoms and signs on admission, laboratory findings, radiologic examination, treatment, and outcome were prospectively collected using an online case record form (CRF). All patients underwent neurologic examination at hospital discharge, and outcome was graded using the Glasgow Outcome Scale. A favorable outcome was defined as a score of 5, and an unfavorable outcome was defined as a score of 1–4.

This study has been approved by the ethical committee of the Academic Medical Center and has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Ethical approval was granted in all participating centers and written informed consent was obtained from all participating individuals or legally authorized representatives prior to their inclusion in the study.

Statistical analyses were performed with the use of SPSS statistical software, version 23 (SPSS Inc.). For numerical and ordinal data the student t-test or Mann–Whitney U test were used. For categorical data the Fisher exact test was used. Logistic regression was used to examine the association between potential predictors and the likelihood of an unfavorable outcome and of death. Predictors were selected on basis of our previous study.[12] Odds ratios (ORs) and 95% confidence intervals (CIs) were used to quantify the strength of these associations. All tests were 2-tailed, and $P < 0.05$ was considered significant.

Results

A total of 1447 episodes of bacterial meningitis were included in the cohort between March 2006 and October 2014. Data on presence or absence of alcoholism was reported for 1359 episodes, of which 88 episodes (6%) occurred in 88 alcoholic patients.

The median age of alcoholic bacterial meningitis patients was 62 years (interquartile range [IQR] 51–65 years, Table 1) and most patients were male (65 of 88 [74%]). Symptoms at presentation were headache in 35 of 55 patients (64%), fever in 63 of 85 patients (74%) and neck stiffness in 49 of 83 patients (59%). An altered mental state was present in 63 of 87 patients (74%), of which 14 were comatose (score on the Glasgow Coma Scale <8). Seizures at presentation occurred in 14 of 76 patients (18%). Disease severity on admission, as reflected by the scores on the Glasgow Coma Scale, between alcoholic and non-alcoholic patients was similar ($P = 0.3$). However, other classical symptoms and signs as headache and neck stiffness were less often present in alcoholic patients compared to non-alcoholic patients (35 of 55 [64%] vs. 935 of 1124 [83%], $P < 0.001$ and 49 of 83 [59%] vs. 905 of 1203 [75%], $P = 0.04$; Table 2). Seizures as presenting symptom were more common in alcoholic patients (14 of 76 [18%] vs. 82 of 1232 [7%], $P < 0.001$). Alcoholic patients presented with a distant focus of infection in 34 of 79 episodes (43%). Pneumonia was more frequently present on admission in alcoholic patients compared to non-alcoholic patients (pneumonia 18 of 78 [23%] vs. 102 of 1232 [8%], $P < 0.001$). Brain imaging was performed on admission in 82 of 88 patients (93%) and revealed abnormalities in 31 patients (38%), consisting of signs of otitis or sinusitis in 19 patients (23%). Other abnormalities were hypodensity

Download English Version:

https://daneshyari.com/en/article/5668737

Download Persian Version:

https://daneshyari.com/article/5668737

Daneshyari.com