Journal of Clinical Anesthesia (2015) **27**, 574–578

Journal of Clinical Anesthesia

Original Contribution

Postdural puncture headache and epidural blood patch use in elderly patients☆

Sari Sjövall MD, PhD[a,1], Merja Kokki MD, PhD[b,*,1], Eetu Turunen MD[b], Mirjam Laisalmi RN[c], Seppo Alahuhta MD (Professor)[c], Hannu Kokki MD (Professor)[b]

[a]*Department of Anesthesia, Satakunta Central Hospital, Satakunnan keskussairaala Sairaalantie 3, FI-28500 Pori, Finland*
[b]*Anesthesia and Operative Services, Kuopio University Hospital, School of Medicine, University of Eastern Finland, PO Box 100, Kuopio, FI-70029 KYS, Finland*
[c]*Department of Anesthesiology and Intensive Care, Oulu University Hospital, PO Box 21, Oulu, FI-90029 OYS, Finland*

Received 2 May 2014; revised 28 April 2015; accepted 14 July 2015

Keywords:
Postdural puncture headache;
Epidural blood patch;
Elderly

Abstract

Study Objective: Postdural puncture headache is a known complication after lumbar puncture. In elderly patients, postdural puncture headache necessitating epidural blood patch is considered rare. The literature assessing the use and safety of epidural blood patch in the elderly is sparse; therefore, in the present study, the use and efficacy of epidural blood patch in patients 65 years or older was evaluated.

Design: Retrospective study.

Setting: Two tertiary and one secondary hospital in Finland.

Patients: The Information System Patient Measures Databases were interrogated to identify patients 65 years or older in whom epidural blood patch was performed between 2000 and 2011.

Interventions and Measurements: The patients' medical records were reviewed for the patient demographics, details of lumbar puncture, postdural puncture headache and other symptoms, conservative treatment, and efficacy and complications of epidural blood patch procedure.

Main Results: A total of 40 patients had epidural blood patch. Their age varied between 65 and 82 years, and 17 were men. The indications for lumbar puncture were as follows: diagnostic (n = 15), therapeutic (n = 1), spinal anesthesia (n = 15), epidural anesthesia/analgesia (n = 5), and combined spinal-epidural anesthesia (n = 4). Most epidural blood patches were performed between 3 and 5 days (1-20 days) after lumbar puncture. In 34 (85%) patients, epidural blood patch provided a complete and persistent relief of symptoms. In 2 patients, the outcome data were not available, and in 4 patients, symptoms were slightly (n = 3) or not (n = 1) relieved with epidural blood patch. Conservative treatment was then provided.

Conclusions: The elderly may also develop postdural puncture headache, and epidural blood patch is an effective and well-tolerated treatment of persistent and severe symptoms.

☆ There were no conflicts of interest. No funding was provided for the present study.
* Corresponding author at: Anesthesia and Operative Services, Kuopio University Hospital, PO Box 100, Kuopio, FI-70029 KYS, Finland. Tel.: +358 44 7174764; fax: +358 17 175387.
E-mail addresses: sari.sjovall@satshp.fi (S. Sjövall), merja.kokki@kuh.fi (M. Kokki), eoturune@student.uef.fi (E. Turunen), mirjam.laisalmi@pp.inet.fi (M. Laisalmi), seppo.alahuhta@oulu.fi (S. Alahuhta), hannu.kokki@uef.fi (H. Kokki).
[1] Equal contribution.

http://dx.doi.org/10.1016/j.jclinane.2015.07.006
0952-8180/

1. Introduction

Postdural puncture headache (PDPH) is a known complication of lumbar puncture (LP) in younger adults [1] and in children [2]. The prognosis of PDPH is good if LP has been made with thin, pencil-point needle, and some patients may recover with conservative approach. If LP is made with large bore, cutting-point needle and the patient develops PDPH, spontaneous recovery is less common. If symptomatic PDPH after LP with large gauge needle is left untreated, it can lead to significant consequences such as chronic headache, cranial nerve root compression, and subdural hemathoma [3]. If PDPH persists and symptoms are severe, treatment with epidural blood patch (EBP) is justified [4].

Lumbar puncture is commonly performed also in the elderly for diagnostic and therapeutic purposes. As the life expectancy is increasing, the total number of LPs performed in this age group is assumed to increase [5,6]. The risk of PDPH in the elderly is less than that in younger patients [7,8]. However, in some cases, the symptoms may last and hamper the activities of daily living. Although EBP is well known to be effective to treat PDPH in children [2] and younger adults [9], not much is known about the need or efficacy in elderly patients. As the symptoms and consequences of untreated PDPH may be severe, it is important to know the incidence and efficacy of EBP also in the elderly.

The aim of this chart review was to describe the use and efficacy of EBP in the elderly 65 years or older in 3 hospitals in Finland during a 12-year period.

2. Materials and methods

The present chart review was approved by the Research Ethics Committee of the Hospital District of Northern Savo, Kuopio, Finland (no. 24/2011), and access to the patient databases was provided by the National Institute for Health and Welfare, Helsinki, Finland (no. THL/626/5.05.01/2011). The hospitals' Information System Patient Measures Databases were interrogated to identify patients 65 years or older in whom EBP was performed in Kuopio University Hospital (KUH), Oulu University Hospital (OUH), and Satakunta Central Hospital (SCH). In the 3 hospitals, the information system databases save diagnostic information of patient measurements and details of operations. For this survey, the database was searched for EBP performed during a 12-year period between January 2000 and December 2011.

Study subjects were those 65 years or older who received EBP. Information concerning LP, headache, other symptoms, and the EBP procedure were retrieved from the databases as well as the patients' charts. The patients' medical records were reviewed for the patient demographics, details of LP, characteristics of PDPH and associated symptoms, conservative treatment provided, EBP procedure, and the effectiveness and complications of EBP. For headache the onset time, distribution, severity on a 4-point rating scale (0 = no, 1 = mild, 2 = moderate, 3 = severe pain) and associated symptoms were recorded. Headache was diagnosed as PDPH or other according to the second edition of the *International Headache Classification* [10]. According to the classification, patients should have had dural puncture performed and headache should have been developed within 5 days after dural puncture, and headache should worsen within 15 minutes after sitting or standing and improve within 15 minutes after lying.

Epidural blood patch was performed according to hospital guidelines. For EBP, we recorded the following information: timing, amount of blood injected, any difficulties in performing EBP, and symptoms related to autologous blood injection. The efficacy of EBP for reduction in headache and other symptoms was recorded on a 4-point rating scale (0 = none, 1 = slight, 2 = marked, 3 = complete). The follow-up was recorded until the patient left the hospital.

2.1. Statistics

Data were entered and analyzed with statistical software for Windows (IBM SPSS Statistics 19; IBM, Somers, NY). The results are presented as mean or median and range, or number of patients as appropriate. Kruskall-Wallis test was applied to identify the factors that might affect the success of EBP and the recurrence of PDPH after initially relief of symptoms. Ordinal and continuous data were compared with the Mann-Whitney U test and the χ^2 test was used for categorical data. A 2-sided P value less than .05 was considered statistically significant.

3. Results

A total of 40 elderly patients had 40 EBP: 16 in KUH, 21 in OUH, and 3 in SCH. The patient characteristics and indications of LP are presented in Table 1. In their medical history, 1 patient had PDPH, 1 had migraine, and 4 had other type of headache. The mean of body mass index in patients with EBP was lower than that in the population: in men with EBP 24 kg/m^2 vs age- and gender-matched population 28 kg/m^2, and in women with EBP 25 kg/m^2 vs in population 29 kg/m^2, respectively [11].

The needle size, type, and timing of EBP after LP are presented in Table 2. Four patients had combined spinal-epidural anesthesia; epidural puncture with an 18-G Tuohy needle and spinal puncture with either a 27-G cutting-point (n = 3) or a 27-G pencil-point needle (n = 1). One therapeutic LP was performed for drainage of cerebrospinal fluid in an 80-year-old man who had normal tension hydrocephalus. The indications for LP during the study period are presented in Figure.