



BRIEF ORIGINAL ARTICLES

External lumbar drainage with volumetric continuing infusion pump in patients with cerebrospinal fluid leak. A case series[☆]



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Received 1 March 2016; accepted 26 September 2016

Available online 3 January 2017

KEYWORDS

Cerebrospinal fluid leak;
External lumbar drainage;
Volumetric continuing infusion pump;
Neuroscience nursing

Abstract

Objective: To describe the incidence and complications arising in a number of cases of patients with cerebrospinal fluid leak treated by external lumbar drainage with infusion pump (IP) volumetric continuous from 2001 to 2014. Quantify cerebrospinal fluid leak closed by lumbar drainage with IP.

Methods: Retrospective descriptive case series study. Population: patients undergoing transsphenoidal pituitary surgery, Chiari surgery and laminectomy, that developed postoperative cerebrospinal fluid leak treated with continuous external lumbar drainage by IP. Variables: age, sex, type of intervention, variables related to the practice of the pump and complications. Average and medians were calculated for quantitative variables, frequencies and percentages for qualitative.

Results: Sample: 11 subjects. Incidence in running IP: disconnection, occlusion and acoustic alarm activation. Most frequently complication is headache; a case of pneumocephalus.

Discussion: The small number of subjects and the heterogeneity of these do not allow for comparison or establishing associations between variables. The resolution of the cerebrospinal fluid leak with continuous IP is lower in this study than others, and may be influenced by the small

DOI of original article: <http://dx.doi.org/10.1016/j.enfcli.2016.09.005>

[☆] Please cite this article as: Manso Melgosa AB, García Gutiérrez H, Fernández Porras M, Castrillo Manero AB, Pérez Marijuán B. Drenaje lumbar externo con bomba volumétrica continua en pacientes con fistula cefalorraquídea. Series de casos. Enferm Clin. 2017;27:40–43.

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number of subjects. It should be noted the frequent activation of the pump alarm for no apparent cause.

Implications for practice: Protocol would be developed for preparing the IP team to reduce the acoustic alarm activation, and would make a prospective multicenter study.

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PALABRAS CLAVE

Fístula de líquido cefalorraquídeo; Drenaje lumbar externo; Bomba de perfusión volumétrica continua; Enfermería en neurociencias

Drenaje lumbar externo con bomba volumétrica continua en pacientes con fístula cefalorraquídea. Series de casos

Resumen

Objetivo: Describir las incidencias y complicaciones surgidas en una serie de casos de pacientes con fístula cefalorraquídea tratados mediante drenaje lumbar externo con bomba de infusión (BI) volumétrica continua desde el año 2001 al 2014. Cuantificar las fistulas cefalorraquídeas cerradas mediante drenaje lumbar externo con BI.

Método: Estudio descriptivo retrospectivo de serie de casos. Población: pacientes intervenidos de cirugía hipofisaria transesfenoidal, Chiari y laminectomía, que desarrollaron en el postoperatorio fístula de líquido cefalorraquídeo tratada con drenaje lumbar externo continuo mediante BI. Variables: edad, sexo, tipo de intervención, variables relacionadas con el funcionamiento de la BI y relacionadas con complicaciones. Se calcularon medias y medianas para las variables cuantitativas y frecuencias y porcentajes para las cualitativas.

Resultados: La muestra incluyó 11 sujetos. Incidencias en el funcionamiento de la BI: desconexión, oclusión y activación de la alarma acústica de la bomba. La complicación más frecuente fue cefalea; hubo un caso de neumoencéfalo.

Discusión: El escaso número de sujetos y su heterogeneidad no permiten comparar ni establecer asociaciones entre variables. La resolución de la fístula de líquido cefalorraquídeo con BI continua es menor en este estudio que en otros revisados, pudiendo estar influido por el tamaño de la muestra. Destaca la frecuente activación de la alarma de la BI, sin causa aparente.

Implicaciones para la práctica: Desarrollar un protocolo para preparar el equipo de la BI, que disminuya la activación de la alarma acústica. Realizar un estudio prospectivo multicéntrico.

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What is known?

The continuous infusion pump drainage method in cerebrospinal fistula is well known; it has been studied in various diseases and appears to have better outcomes than gravity drainage. However, many hospitals in Spain still do not use this method.

What do we contribute?

Experience of the technique in the University Hospital of Burgos; after finding that the pump alarm often activated with no apparent cause, we created a protocol to prepare the continuous volumetric infusion pump in such a way as to restrict the alarm activating unless due to the operation of the equipment and the machine sensors, and not to the functioning of the drainage.

Introduction

Cerebrospinal fluid fistula (CFF) is a postoperative complication that is difficult to manage comprising communication of the subarachnoid space through the structures involved in surgery.¹

The incidence after laminectomy is 2.7%,² in type I Chiari malformation it varies between 8.3³ and 4.76%,⁴ and after transphenoidal hypophysectomy between 1.5 and 4.2%.⁵

Various treatments have been used to resolve the condition, reoperation, conservative treatment, evacuative lumbar puncture and drainage via lumbar catheter.

Lumbar drainage (LD) evacuates cerebrospinal fluid (CSF) outside, preventing excessive pressure on the neural structures and CSF leakage.² Its continuous use maintains a constant pressure gradient between intracranial and intraspinal CSF, enabling closure of the fistula.⁶ It involves inserting a spinal catheter into the subarachnoid space between L4-L5 for 3–7 days and connecting the distal end to the drainage bag. LD is very sensitive to postural changes, to volume, and speed of CSF drainage.⁷

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