Case report

Dialysis-associated headache, management protocol proposal

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Introduction

Dialysis-associated headache is classified as an event that occurs in therapy and lasts up to 72 hours,[1] the mechanism of this headache is not clear to date.[2] One hypothesis is that the changes in solutes, especially urea, that the patient has in hemodialysis, may cause an osmotic imbalance between the plasma and the cell. Since, the removal rate of this solute is much higher in the plasma, generating a gradient in favor of the cell, which may lead to cerebral edema, clinically manifested as headache at the end or post dialysis. This cerebral edema increases intracranial pressure, with a progressive detriment in cerebral perfusion and subsequent damage,[3] of greater proportion in renal patients who have severe endothelial dysfunction and strong multimorbid load, especially older adults.[4]

The benefit of mannitol in these cases is clearly demonstrated,[5] but studies have focused especially on edema due to cranioencephalic trauma, even in conjunction with hypertonic saline, where both have shown to reduce intracranial pressure with a benefit in the time of permanence in favor of hypertonic saline,[6] except that for the patient on dialysis hypertonic saline has greater side effects in the medium term, especially in fluid gain and severe increase in blood pressure.

To date, there is no established protocol for the management of this osmotic headache, which causes a very significant detriment in the quality of life of hemodialysis patients,[7,8] For this reason, a series of cases are presented in which an alternative[9] protocol is piloted for its management, with mannitol, in view of the prevalence of this problem and the lack of response to conventional medication.

Work presented at the Latin American Congress of Nephrology 2012, in the Poster category (TLP-SAB406).

Objective

To evaluate the efficacy of mannitol on symptoms compatible with hemodialysis imbalance within a defined protocol, and to determine the side effects associated with the use of mannitol in patients with end-stage renal disease treated with hemodialysis.

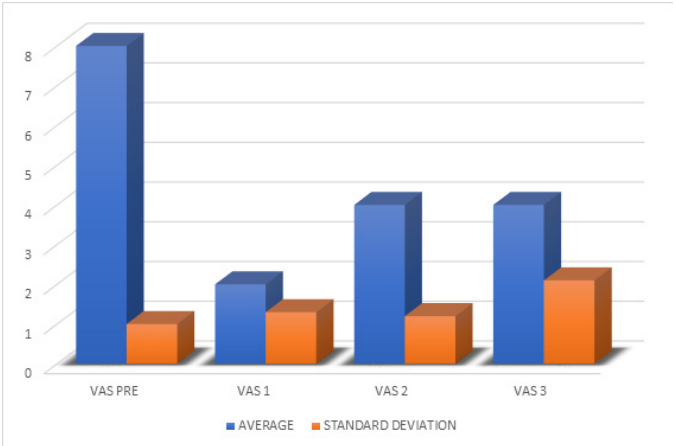
Methodology

Prospective study of before and after, non-randomized, clinical intervention, with the endorsement of ethics and bioethics committee. It included patients older than 18 years old, who have been on hemodialysis for more than 3 months, clinical diagnosis of dialysis headache, and who signed informed consent. All patients with psychopathologies or with any other type of headache were excluded.

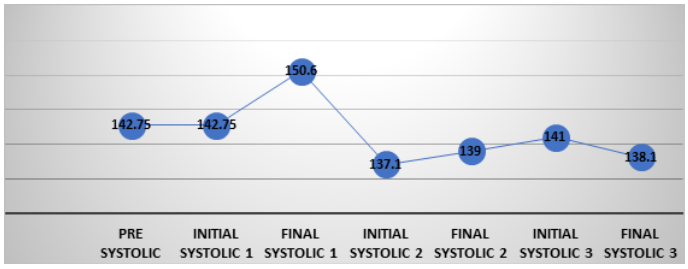
Protocol: intravenous intra-dialysis mannitol in two equal doses of 30cc, first bolus at the 2nd hour and the second at the 3rd hour after hemodialysis. Symptom records are taken guided by a visual analog scale (VAS) at the time of diagnosis and during the intervention, which is during 3 hemodialysis sessions, and multiple variables and possible side effects such as weight gain during dialysis are also recorded in a database.

Results

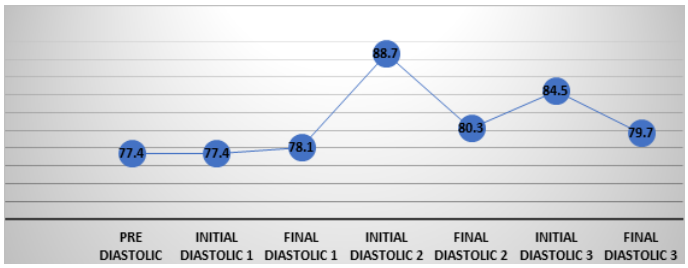
During the period from June 2010 to March 2011, a total of 8 patients were included, aged 47.5+/-19 years, 50% Hispanic race, 65% female gender. All patients had post-dialysis headache as a symptom, and one of them also had nausea. The average pre-treatment VAS was 8.2, dialysis VAS #1: 2.5(P=0.003), final VAS: 4.4 (P=0.05), overall P=0.016 (Graph 1). Two patients required analgesia at one dose each. There was no significance between hemodynamic parameters (Graph 2 and 3) and weight gain before the drug and during the study, likewise, no adverse events were reported.



Graph 1 Variations of headache intensity (averages and standard deviation), with mannitol interventions, by means of the patient's report with the visual analog scale (VAS - EVA).



Graph 2 Average systolic blood pressure in patients who received mannitol.



Graph 3 Mean diastolic blood pressure of patients who received mannitol.

Conclusion

1. The proposed protocol for the use of mannitol for the management of dialysis headache is effective and safe, at the doses proposed, in adult patients.
2. From the clinical point of view, in practice it is not recommended to routinely measure intracranial pressure in patients with post-dialysis headache; instead, an imagenlogical study[10] could be performed, if the resource is immediately available, for the most severe cases (with time the osmotic gradient is regulated and symptoms subside).
3. The use of hypertonic sodium is recommended in post-traumatic edema over mannitol,[6] but in the case of hemodialysis patients, these sodium concentrations have been shown to have worse side effects in the medium term.
4. The use of mannitol had no real impact on blood pressures either intradialytic or between sessions (Graph 2 & 3).

Acknowledgments

None.

Conflicts of interest

The author declares that there are no conflicts of interest.

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