

Exploration between clinical and haemorrhological factors with eclampsia: a case control study in a reference fourth level university hospital, 1st July 2007 up to 31th December 2009, Medellín-Colombia, S.A.

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Introduction

The hypertensive disorders are the most frequent medical problems during pregnancy. Preeclampsia is the most critical form, and eclampsia is the leader cause of maternal mortality in the world. More than 85% of maternal deaths are preventable, and 99% falls in the developing countries. In Colombia, preeclampsia is the second cause of maternal mortality, and stroke secondary to eclampsia is the final cause of death. We asked if the haemoconcentration, represented by high level of hematocrit, could be associated and explain the stroke in preeclampsia

Objectives

General.

To explore the relationship among clinical factors and haemorrhological changes with eclampsia in patients assisted in the maternal unit, HUSVF, during 2007 and 2009

Specifics.

To describe and characterize the socio-demographic, clinical and haemorrhological variables in the preeclampsia population according to eclampsia

To estimate the risky odds between the significant independent variables with the eclampsia variable throughout a binary logistic regression model

Materials & Methods

Case control study, cases (n:31) and controls (n:62), in a fourth level University Hospital, during 30 months between 1st July 2007 to 31th December,

2009. Population of preeclampsia patients assisted (N=1398). (Fig. 1) It was strictly controlled the bias; univariate and bivariate analysis were done to characterize the groups; stratified analysis in order to control confusion and to determine interaction; then a binary logistic regression in order to establish the relationship and possibility of causality. The associative measures (OR) were included with their 95% Confidence Intervals (CI95).

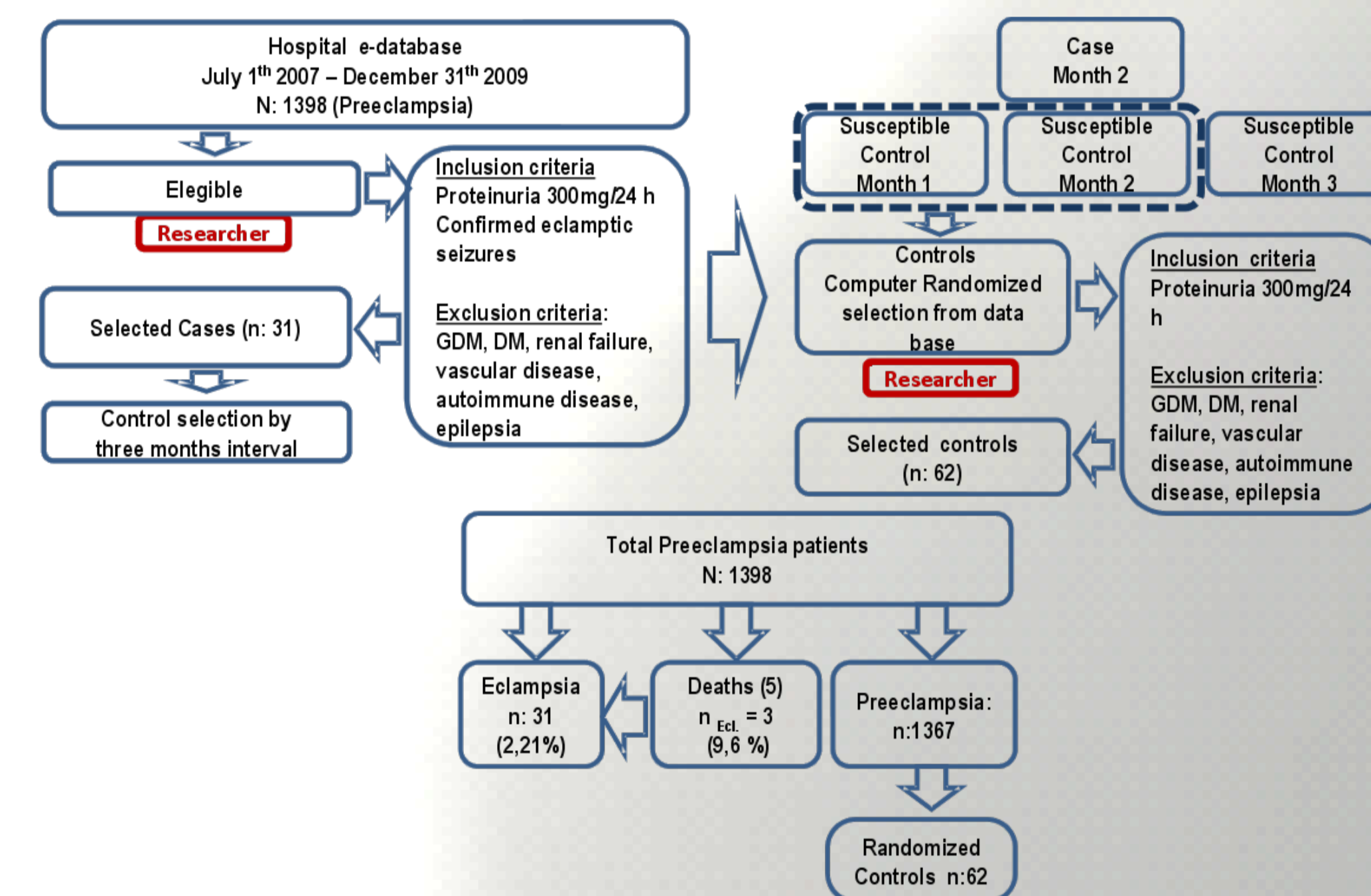


Figure 1. Selection of cases and controls from total Preeclampsia population assisted in the Maternal Unit. HUSVF, between July-2007 to Dec.-2009

Results

The University hospital is a high complexity level and a reference medical place for the region. Demographic characteristics belong to the lowest income population. (fig 2.) It was done a binary logistic regression analysis where the significant variables after confusion control were: No Magnesium sulphate treatment (OR: 29,39; 95CI: 4,64-186,24); leucocytes $\geq 12.000/\text{mm}^3$ (OR: 15,61; 95CI 2,67-91,04); age ≤ 19

y. (OR: 8,86; 95CI 1,75-44,79); hematocrit ≥ 40 (OR: 7,54; 95CI 1,08-52,43); medium arterial pressure ≥ 123 mm Hg (OR: 6,60; 95CI 1,19-36,49); platelets $\geq 250.000/\text{mm}^3$ (OR: 5,83; 95CI 1,05-32,27). (Table 1)

- 75% were Hispanic, 15% afro-latinamerican. 32,3% lived in low income rural areas
- 89,3% (n:25) of cases belonged to the poorest population (z: 1,5; p:0,13; IC95: -0,03 y 0,39)
- Cases ended at 36 w. (p75: 39 w.) and controls at 35,5 w. (p75: 37 w.)
- Median age of cases: 18 yr. (p75: 20 yr.) vs median age of controls: 22 yr. (p75: 30 yr)
- 83,9% of cases were primiparity vs 59,7% of controls were multiparity (z:2,12; p:0,03; IC95: 0,04; 0,44)

Figure 2. Socio demographic characteristics of population assisted by a high complexity University Hospital. HUSVF.

Table 1. Binary logistic regression model, including those variables significantly associated with eclampsia after stratified and confuses analysis

Variables	B	ET	Wald	p	OR	OR 95CI
No MgSO4	3,381	0,94	12,876	0,000	29,39	4,64 - 186,24
Leucocytes ($\geq 12000/\text{mm}^3$)	2,748	0,90	9,326	0,002	15,61	2,67 - 91,04
Maternal age (≤ 19 yr.)	2,181	0,83	6,961	0,008	8,86	1,75 - 44,79
Hematocrite ($\geq 40\%$)	2,021	0,98	4,173	0,041	7,54	1,08 - 52,43
MAP (≥ 123 mm Hg)	1,887	0,87	4,880	0,031	6,60	1,19 - 36,49
Platelets ($\geq 250.000/\text{mm}^3$)	1,764	0,87	4,086	0,043	5,83	1,05 - 32,27

Conclusions

Eclampsia was significantly related with clinical and haemorrhological variables. The haemoconcentration associated with eclampsia is an important clinical sign, susceptible to be ameliorated during the acute preeclampsia treatment, with controled IV solutions. Magnesium sulphate is critically associated with neural protection, and must be universally administered in

all patients. Adolescence is a risky factor for eclampsia, possibly by the intact cerebral auto-regulation. It was interesting the platelet higher than $250.000/\text{mm}^3$ associated with eclampsia, which could suggest a protective activity in HELLP syndrome. These results could be useful during the emergence treatment of preeclampsia, mainly in low income countries with low quality of health services and relevant problems in the women's public health. It can be also useful for lowering cost in clinical interventions in order to modulate the indicators of preventable maternal morbidity and to contribute with maternal mortality reduction.

References

- Belfort M, Varner MW, Dizon-Townson DS, Grunewald C, Nisell H. Cerebral perfusion pressure, and not cerebral blood flow, may be the critical determinant of intracranial injury in pregnancy: A new hypothesis. Am J Obstet Gynecol. 2002; 187(3):626-634
- Bollini A, Hernandez G, Bravo-Luna, M, Cinara, L, Rasia, M. Study of intrinsic flow properties at the normal pregnancy second trimester. Clin Hemorheol Microcirc. 2005; 33(2):155-161
- Ganzevoort W, Rep A, Bonsel GJ, de Vries JJP, Wolf H. Plasma volume and blood pressure regulation in hypertensive disorders. J Hypertension. 2004; 22:1235-1242
- Ginsberg, M. Cerebral Circulation: Its regulation, pharmacology and pathophysiology. In: Asbury A, Mc Khann, GM, Mc Donald, WI, editors. Diseases of the nervous system Clinical Neurobiology. Philadelphia: WB Saunders Co.; 1992. P:989-1001
- Kaul S, Jayaweera, AP. Determinants of microvascular flow. European Heart Journal. 2006; 27:2272-2274.
- Khan K, Wojdyla D, Say L, Golmezoglu AM, van Look PFA. WHO analysis of causes of maternal death: a systematic review. Lancet. 2006; 367:1066-1074
- Mannini L, Cecchi E, Fatini C, Marcucci, R, Alessandriello-Liotta, A, et. Al. Clinical haemorrhology and microcirculation. Ann Inst Super Sanita. 2007; 43(2):144-155
- Zeeman G, Cipolla MJ, Cunningham FG. Cerebrovascular Patho-Physiology in Preeclampsia/Eclampsia. In: Lindheimer MD RJ, Cunningham FG., editor. Chesley's Hypertensive Disorders in Pregnancy. San Diego. 2009. P. 227-247

In Memory to those women who died, lighting to us the ideas for mothers will survive ...

...women's labouring walking over the ridges of the dead fence...giving out life!
Lucía González de Paco, Alto Bolivia, Aimara's Dula