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EPIDEMIOCLINICAL AND EVOLUTIONARY FEATURES OF OCULAR MANIFESTATIONS DURING PRE-ECLAMPSIA AND ECLAMPSIA AT THE YOPOUGON UNIVERSITY HOSPITAL

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ABSTRACT

Introduction: Pre-eclampsia and eclampsia are obstetric emergencies involving maternal and foetal vital prognosis. They are providers of ocular complications.
The aim of our study was to highlight the epidemioclinical and evolutionary features of these ocular lesions in pre-eclamptic and eclamptic patients.
Methods: This was a prospective cross-sectional study with a descriptive purpose which was carried out over a period of 5 months from March 1 to July 31, 2021. It included all hospitalized pre-eclamptic and eclamptic patients.
Results: We collected 33 cases of pre-eclampsia and eclampsia out of a total of 325 pregnant women that is a hospital prevalence of 9.37%. The average age of our patients was 29 years with extremes ranging from 17 to 45 years. Eclampsia accounted for 57.57% of the diagnosis and pre-eclampsia 42.42%. Visual acuity was normal in 42.42% of cases. Hypertensive retinopathy was detected in 63.63% of cases. The most severe fundus lesions were more common in pregnant women with severe pre-eclampsia and eclampsia. Regression of fundus lesions was visible in 79.17% of cases.
Conclusion: Ocular lesions occur mainly in severe cases of pre-eclampsia and their research would improve their management.

Keywords: Manifestations, Ocular Eclampsia, Pre-Eclampsia

1. INTRODUCTION

Eclampsia and severe pre-eclampsia are dreadful complications of toxaemia of pregnancy, marked by heavy maternal-foetal mortality and morbidity.

They are responsible for 10 to 18% of maternal deaths in developed countries and 10 to 25% of deaths in developing countries Chaoui et al. (2002). They are providers of major complications such as acute renal failure, HELLP syndrome, disseminated intravascular coagulation (DIC), and cerebrovascular and microvascular accidents such as hypertensive retinopathy, ischemic optic neuropathy, oedematous papillopathy and exudative retinal detachment Edouard et al. (2003).

They associate arterial hypertension with pathological proteinuria and oedema of the lower limbs which is an inconstant element.

These pathologies constitute the third cause of maternal and perinatal morbidity and mortality. While their incidence remains relatively low in developed countries, it is still high in poor countries.

In Côte d'Ivoire, we do not have literature data on their ocular complications, which motivated the realization of this study. The key objective of this study was to bring all actors in the management of this pathology to adopt a monitoring schedule for parturients in order to prevent the occurrence of these microvascular accidents.

2. METHODS

We carried out a prospective study with an analytical and descriptive purpose over a period of 5 months from March 1 to July 31, 2021 in the ophthalmology and obstetrics and gynaecology units of the Urban Health Facility of Yopougon Wassakara, a peripheral health centre which received the said relocated units of the Yopougon University Hospital. The enrolment of our patients was done on a survey form after obtaining the consent of either the patient or her legal guardian and this once the vital maternal and foetal emergency was lifted. Were Included in this study all pregnant women presenting with preeclampsia or eclampsia whose vital prognosis was no longer at stake and whose consent was obtained. We did not include all pregnant women presenting with eclampsia or pre-eclampsia with major neurological disorders for which consent could not be obtained during our study period. The criteria analysed were: age, occupation, marital status, presence or not of vascular pathology (hypertension and/or diabetes), reason for consultation or hospitalization, gravidity**,** parity, gestational age, the number of prenatal consultations (PNC), the treatment undertaken, the paraclinical assessment carried out during prenatal consultations, ophthalmological warning signs, the visual acuity, the results of the examination of the fundus.

For the analysis of our data, we used Excel, Word and Fisher and Chi-square tests.

Our study presented some limitations relating to the reduced mobility of our pregnant women, their relative state of neurological stability, the reduced number of beds in the structure for the hospitalization of these pregnant women and the absence of intensive care unit for the most severe cases we had to refer.

For ethical considerations, we obtained, in addition to the consent of the pregnant women or their accompanying persons, the authorization of the administrative officials of the FSUCOM of Yopougon Wassakara and the confidentiality of the data.

3. RESULTS

During our study period, we collected 38 patients with eclampsia or preeclampsia out of 424 cases of parturients or pregnant women, that is a prevalence of 8.96%. The average age was 26 years ± 5.03 and extremes of 15 years and 47 years. Traders and housewives were the most common occupations. They were in the majority of cases in couple (married or concubines) that is 72.72%. Hypertension and seizures were the main reasons for consultation or hospitalization with 42.42% and 45.45% respectively. Indeed, hypertension was the main vascular risk factor presented by these patients with 66.66%. It was mainly paucigravid (2 to 4 pregnancies) in 54.5% of cases, pauciparous (2 to 4 deliveries) in 39.3% of cases and multiparous (> 4 pregnancies) in 36.3% of cases. The gestational age of our patients could not be specified in 7. 12 patients had a gestational age less than 34 weeks of amenorrhea (WA), 15 had between 34 and 37 WA and 4 had more than 37 WA Figure 1.

Figure 1

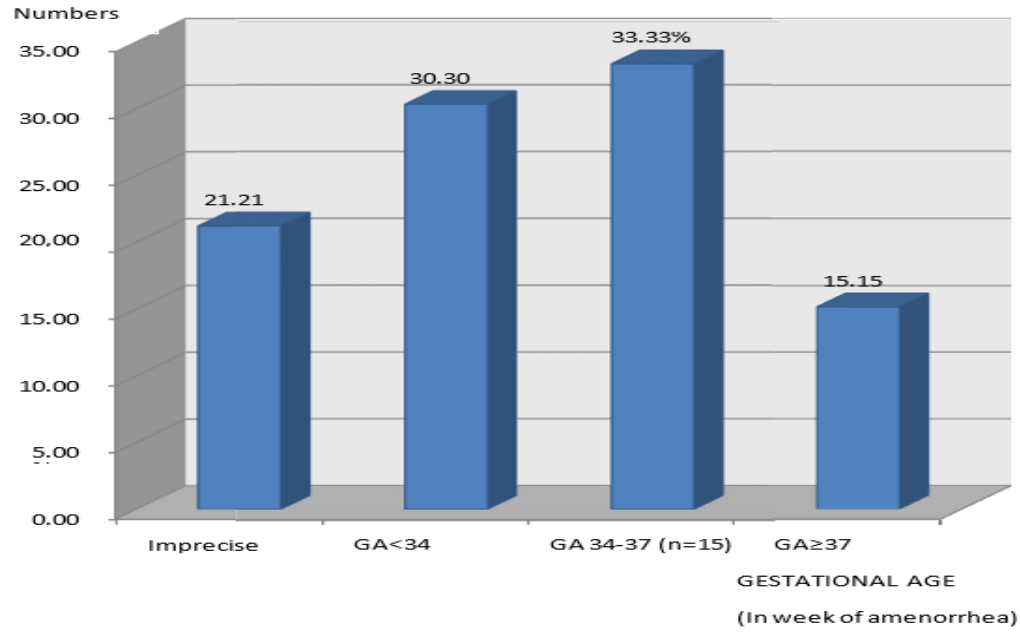

Figure 1 Distribution of Our Patients According to Gestational Age

The obstetric follow-up of our patients resulted in 4 PNCs and more for 19 of them, less than 4 PNCs for 17 and no PNC for 2 of them. 57.89% of our patients had no blood tests during their pregnancy and 31.57% no proteinuria during their follow-up Table 1 and Table 2 .

Table 1

Table 1 Distribution of Our Patients According to the Results of the Paraclinical Assessment

Assessment	Results	Numbers (n)	Percentage (%)
No assessment		22	57.89
Complete assessment			
	Normal	05	13.15

	Anemia	02	5.26
	HELLP Syndrome	02	5.26
Incomplete assessment			
	Normal	03	7.89
	Anemia	03	7.89
	Anemia and thrombopenia	01	2.63
Total		38	100

Table 2

Table 2 Distribution of Our Patients According to Proteinuria

Assessment	Results	Numbers (n)	Percentage (%)
Proteinuria			
	BU +	05	13.15
	BU ++	05	13.15
	BU +++	10	26.31
	BU ++++	06	15.78
No proteinuria		12	**31.57**
Total		38	100

The diagnosis of preeclampsia was made in 39.48% of our patients and that of eclampsia in 60.52% of our patients Table 3 .

Table 3

Table 3 Distribution of Our Patients According to the Established Diagnosis

Diagnosis	Numbers (n)	Percentage (%)
Eclampsia		
In pre-partum	18	47.36
In Post-Partum	05	13.15
Pre-eclampsia		
Moderate	02	5.26
Severe	11	28.95
Superimposed	02	5.26
Total	38	100

Caesarean section was the most frequently used mode of delivery with 64% of cases; 13% of our patients gave birth vaginally and 23% had a developing pregnancy. The maternal prognosis was good in 97%, however there was one case of maternal death, as well as 3 cases of foetal death in utero. The functional ophthalmological symptomatology was dominated by headaches (9.09%), phosphenes (9.09% and visual blurring (21.21%). We also note the absence of symptoms in 57.57%. More than half of our patients had visual acuity ≥ 7/10th, that is 66.66%; only 15.15% of them presented with unilateral or bilateral visual impairment or blindness at the time of their examination. The lesions of the eye fundus of our patients were distributed as follows: 54.5% of cases of hypertensive retinopathy, all stages combined (I, II and III) according to the Kirkendall classification, including 36.4% at stage III with bilateral papilledema and 9.09% with serous retinal detachment (SRD). In 36.36%, fundus examination was normal. There was no significant difference as for the occurrence of retinal or papillary complications in patients with a vascular history (HBP or previous eclampsia) and those who do not. Indeed, there were 7 cases of hypertensive retinopathy in patients with no history of hypertension, as well as 2 cases of SRD without any particular history and 4 cases of bilateral papilledema with no particular history Table 4 .

Table 4

Table 4 Correlation Between Medical History and Occurrence of Fundus Lesions

Initial fundus/ ATCD	Normal		OP		HR I		HR II		HR III		SRD		Total
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	
None	10	26.31	04	10.52	05	13.15	01	2.63	01	2.63	02	5.26	23
HBP I	00		01	2.63	00		00		01	2.63	00		02
HBP II	01	2.63	01	2.63	00		01	2.63	00		01	2.63	04
HBP III	01	2.63	00		00		00		00		01	2.63	02
HBP G	00		00		01	2.63	01	2.63	02	5.26	01	2.63	05
Eclampsia	00		01	2.63	00		00		00		01	2.63	02
Total	12	37.57	07	18.42	06	15.78	03	7.89	04	10.52	06	15.78	38

We observed a significant difference as for the occurrence of papilledema in pregnant women (p = 0.307); indeed 8 pregnant women with less than 37 WA presented with papilledema against no case after 37 WA. There was no causal relationship between the occurrence of fundus lesions and the number of PNCs, nor between these lesions and the existence of proteinuria, nor between these lesions and the pathology presented by the parturient (eclampsia or preeclampsia). Apart from the management of hypertension and resuscitation measures, when necessary, 33% of our parturients benefited from taking magnesium sulphate to prevent or treat new attacks or to prevent attacks from recurring.

4. DISCUSSION

Eclampsia and pre-eclampsia are serious complications of pregnancy responsible for significant morbidity and mortality. They can occur both during pregnancy and postpartum Sabiri et al. (2007), Mojadidi and Thompson (1973), Miguil et al. (2003). In developing countries; it is the cause of a third of maternal deaths Mathew et al. (2003). It is more common in prepartum in about 80% of cases. The clinical presentation of preeclampsia and eclampsia is characterized by an attack preceded by headaches, visual disturbances, and epigastric pain Veltkamp et al. (2000) associated with all known biological disturbances. Recent studies have shown that during eclampsia and/or preeclampsia, NMR features**,** lesions usually result in areas of T2 hyper-signals and T1 hypo-signals or iso-signals most often distributed in the occipital and parietal lobes Zeeman et al. (2004). This distribution could explain the occurrence of reduced visual acuity which is part of the ocular manifestations observed during these gyneco-obstetrical complications. A major role of pregnancy and especially of the placenta in the genesis of this pathology has been established. The primum movens of preeclampsia is a developmental anomaly of the placenta which has difficulty in meeting the oxygen needs of the foetus with the consequence of the release of vasoactive substances leading to structural and functional changes in the maternal endothelium. Indeed, all our parturients did not have a history of hypertension when these complications occurred. Similarly, the occurrence of retinal and/or papillary lesions was not necessarily correlated with the existence of a history of hypertension or previous eclampsia. SRD is a rare complication of pre-eclampsia; in fact, it concerns less than one in 10,000 preeclamptic patients Julius & Bosco (1961). However, it may be thought that this incidence is underestimated due to the absence of systematic ophthalmological examination in these patients, the extra-macular location of the SRD possibly making it go unnoticed. This underestimation would also affect all other retinal and papillary disorders. According to a recent review of the literature, the SRD of pre-eclampsia is often bilateral (89%) and is more common in primiparous women (60%), primiparity being itself a risk factor for preeclampsia. Vigil-De Garcia et al. (2011), Duckitt & Harrington (2005). Apart from SRD, we have other complications such as papilledema of hypertensive retinopathy at stage III of the Kirkendall classification, but also hypertensive retinopathy at stages I and II of the same classification. However, we did not find any significant difference between these retinal damages and the blood pressure figures and the existence of hypertension on admission.

According to Moshiri Moshiri et al. (2013), the severity of hypertensive retinopathy is rather related to the level of placental insufficiency and not to blood pressure.

The therapeutic management of eclampsia is based on magnesium sulphate which remains the reference molecule to stop the crisis as well as to prevent its recurrence. It is superior to other anticonvulsants Crowther (1990), Lucas et al. (1995). The monitoring and control of BP and functional signs are fundamental elements.

5. CONCLUSION

Pre-eclampsia and eclampsia are a real public health problem. They affect nearly one in 10 women.

We found the most advanced retinopathies in severe cases of pre-eclampsia. Our study thus makes it possible to consider these retinal lesions as signs of gravity of pre-eclampsia and their early discovery would make it possible to institute an early and effective management as soon as possible in order to improve the maternal-foetal prognosis.

Thus, ophthalmological examinations including a fundus in this population are justified to look for these lesions.

CONFLICT OF INTERESTS

None.

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REFERENCES

Chaoui, A., Tyane, M., & Belouali, R. (2002). Prise En Charge De La Pré Éclampsie Et De L'éclampsie. 2eme Conférence Nationale Du Consensus Maroc, Marrakech Les 19, et a1 avril, 20.

Crowther, C. (1990). Magnesium Sulphate Versus Diazepam in the Management of Eclampsia : A Randomized Controlled Trial. Br J Obstet Gynaecol, 97(2), 110-117. https://doi.org/10.1111/j.1471-0528.1990.tb01735.x.

Duckitt, K., & Harrington, D. (2005, January 27). Risk Factors for Preeclampsia at Antenatal Booking: Systemic Review of Controlled Studies. 12, 330-565. https://doi.org/10.1136/bmj.38380.674340.E0.

Edouard, D. (2003). Anesthésie-Réanimationn. 36-980-A-10, Obstétrique, Encycl. Med. Chir. 5-071-B-30, 1-5.

Julius, A. S., & Bosco, M. D. (1961). Spontaneous Nontraumatic Retinal Detachment in Pregnancy. Am J Obstet Gynecol 82(1), 208-212. https://doi.org/10.1016/S0002-9378(16)36116-6.

Lucas, M. J., Leveno, K. J., & Cunningham, F. J. (1995). A Comparaison of Magnesium Sulfate with Phenytoine for the Prevention of Eclampsia. N Engl J Med, 333, 201-205. https://doi.org/10.1056/NEJM199507273330401.

Mathew, R., Raj, R. S., & Sudha, P. (2003). Late Post-Partum Eclampsia without Prodromal. India, 51 (4), 539-40.

Miguil, M., Salmi, S., Mouhaoui, M., & El Youssoufi, S. (2003). Aspects Épidémiologiques Et Pronostiques De L'éclampsie. Cah Anesthesiol, 51(3), 177-80.

Mojadidi, Q., & Thompson, R.J. (1973), Five Years 'Experience with Eclampsia. S Med J, 66, 414-6. https://doi.org/10.1097/00007611-197304000-00004.

Moshiri, A., Brown, J., & Sunness, J. R. (2013). Pregnancy-Related Diseases (Ed. 5th). London : WB, Saunders, 2, 1571-1582. https://doi.org/10.1016/B978-1-4557-0737-9.00092-8.

Sabiri, B., Moussalit, A., Salmi, S., EL Youssoufi, S., & Miguil, M. (2007). L'éclampsie Du Post Partum : Épidémiologie Et Pronostic. J Gynéco Obst Et De Biol De La Reproduction, 36(3), 276-280. https://doi.org/10.1016/j.jgyn.2006.12.025.

Veltkamp, R., Kupsch, A., Polasek, J ., Yousry, T. A., & Pfister, H. W. (2000). Late Onset Post-Partum Eclampsia without Pre-Eclampsia Prodromi: Clinical and

Neuroradiological Presentation in Tow Patients. J Neur Surg Psy, 69(6), 824-827. https://doi.org/10.1136/jnnp.69.6.824.

Vigil-De Garcia, P., & Ortega-Paz, L. (2011 June 29). Retinal Detachment in Association with Preeclampsia, Eclampsia, and Help Syndrome. Int J Gynaecol Obstet, 114(3), 223-225. https://doi.org/10.1016/j.ijgo.2011.04.003.

Zeeman, G. G., Fleckenstein, J. L., Cunningham, F. G., & Twickler, M. D. (2004). Cerebral Infarction in Eclampsia. Am J Obstet Gynecol, 190(3), 714-720. https://doi.org/10.1016/j.ajog.2003.09.015.