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The Acute Angle Closure Crisis in Senegalese Melanodermas: Epidemiological and Clinical Aspects of 24 Cases

Sy El Hadji Malick[1*], Aw Aissatou[1], Soda Mbaye[1], Mouhamed Ndiaye[1], Aly Mbara Ka[1], Jean Pierre Diagne[1], Aboubacry Sadikh Sow[2], Joseph Matar Mass Ndiaye[2], Paule Aida Ndoye[2], Papa Amadou Ndiaye[1]

[1]AbassNdao University Hospital Center, Dakar, Senegal
[2]Aristide Le Dantec University Hospital Center, Dakar, Senegal
Email: *elhadjimalicksyonly@gmail.com, aichatou18@gmail.com, soresm93@gmail.com, ndiayeamed313@gmail.com, kaam75@yahoo.fr, sebanemack@yahoo.fr, ahmidouabd@gmail.com, sadikh_sow@yahoo.fr, josephmmndiaye@gmail.com, pauleaida@gmail.com, pagets001@gmail.com

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Abstract

Introduction Acute angle closure crisis (AACC) is a major ophthalmic emergency. It is a sight-threatening pathology that is very common in women but rarely described in melanodermas. The aim of this work is to investigate the epidemiological and clinical aspects of acute angle closure crisis. **Results** We collected 24 patient records, totaling 25 eyes. The average age of our patients was 52.04 years, with a male-to-female ratio of 0.6. A family history of glaucoma occurred in 34% of patients. Patients consulted for a painful red eye associated or not with decreased visual acuity (DVA). The condition was bilateral in one patient. The average visual acuity wax 0.34/10^{e}. The cornea was cloudy and the pupil in areflexic mydriasis in all sick eyes. Hypothalamia was present in 72% of eyes and cataracts in 54.16% of cases. The average intraocular press was 44.38 mmHg and the average cup/disc (C/D) was 0.46. Gonioscopy was performed in 7 patients. The fellow eye did not present any abnormalities in 92% of cases. **Conclusion** The acute angle closure crisis is a rare condition in melanodermas and common in woman. His diagnostic is essentially clinical and completed by gonioscopy which plays a fundamental role.

Keywords

Acute Crisis, Angle, Hypertonia, Gonioscopy

1. Introduction

The acute angle closure crisis (AACC) is a major diagnostic and therapeutic

emergency which, when left untreated may lead to blindness by optic atrophy. It is more often unilateral, however, 10% of acute angle closure glaucoma are bilateral and simultaneous [1]. It is a relatively rare condition in Africa, where open angle glaucoma is the most common form and acute angle closure glaucoma is occasionally observed [2]. The advent of new measurement devices that allow for precise biometric data of at-risk patients has improved clinical and therapeutic approaches [3]. This acute angle closure will subsequently lead to ocular hypertonia, responsible for progressive damage to the optic nerve, thus defining glaucoma [1]. Many studies have been carried out on Asian populations, where the prevalence is higher than in African populations [2].

So, we wanted to highlight through this work. We are aiming to investigate the prevalence, risk factors, and clinical presentation of acute angle closure crisis in Senegalese melanoderma.

2. Materials and Methods

We conducted a retrospective analytical study of 24 patients treated for an acute angle closure attack from January 2011 to December 2021 at the ophthalmology center of the Aristide Ledantec hospital. All epidemiological, clinical and risk factors for the occurrence of the attack were listed and recorded on a survey form prepared for this purpose. All patients treated for an acute angle closure attack during the study period were included. All incomplete or unusable files for this study were excluded. This enabled us to compile 24 files of patients meeting the inclusion conditions over a period of 10 years. Statistical analyses were performed using Excel 2016 software.

3. Results

We collected 24 patient records received with an acute angle closure crisis including one case that was bilateral and synchronous, totaling 25 affected eyes. The average age of our patients was 52.04 years, with peaks in the 41 - 50 years and 56 - 70 years age groups (**Figure 1**). The sex ratio was 0.6 (**Figure 2**). A family history of glaucoma was found in 37.5% of cases, and a history of prior episodes of painful red eyes was reported in 8 cases.

The risk factors for the occurrence of an AACC attack in our study population were female gender, age over 50, familial galucoma and senile cataract (**Figure 3**).

The symptoms were marked by a painful red eye isolated in half of the cases and in 33.33% of cases, it was associated with a decreased visual acuity.

The crisis was unilateral in 95.9% of the patients.

The ophthalmological examination described an average visual acuity of 0.34/10^{e} with extreme light perceptions (LP) and 8/10^{e}. Cornea was cloudy and areflexic mydriasis was found in all affected eyes and a coexistence with a hypothalamia in 72% of cases. Senile cataracts were found in 54.16% of cases.

The average intraocular pressure (IPO) was 44.38 mmHg with a range from 35 to 64 mmHg. The gonioscopy was performed on 7 patients, accounting for

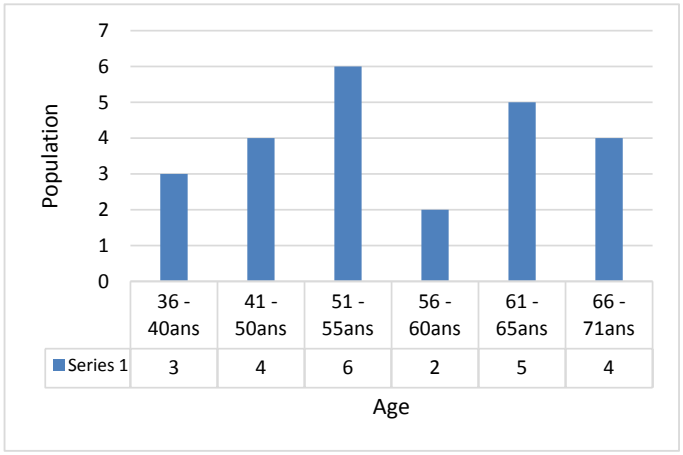

Figure 1. Distribution of patients by age group.

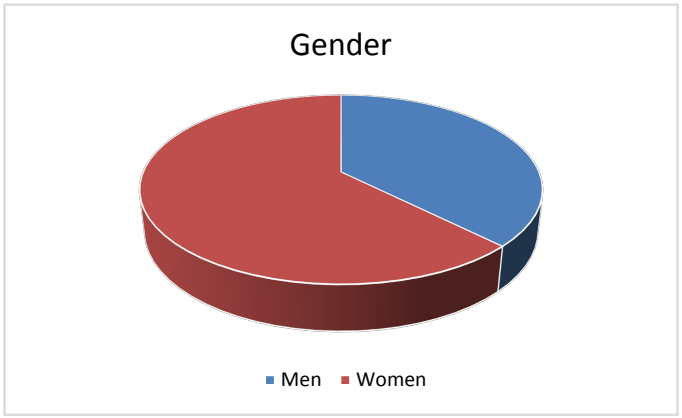

Figure 2. Distribution of patients by gender.

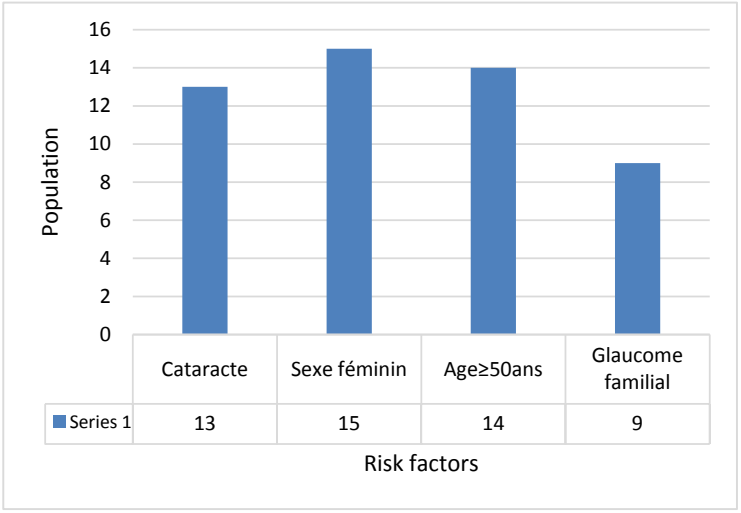

Figure 3. Summary of the various risk factors found in our study population.

29.16% of cases. According to Shaffer's classification, five (5) patients had complete closure (grade 0) and two (2) patients were at high risk of angle closure

(grade 1). The average cup/disc was 0.46 with a range from 0.3 to 0.9 on affected eyes and within normal limits of 92% of fellow eyes.

The fellow eye was normal in 92% of cases.

4. Discussion

The global distribution of angle closure glaucoma and open-angle glaucoma is similar, even though acute angle closure crisis is a rare condition in Melanodermas, with a frequency of approximately 1 in 150 cases of glaucoma [4].

It is a pathology frequently found in older individuals, numerous studies confirmed this trend [1] [5]. This aligns with the results of our series that present an average age of 52.04 years. This prevalence is attributed to various predisposing factors such as a decrease in the depth and volume of the anterior chamber, a reduction in pupillary diameter, and an increase in lens volume that occurs with age [6].

Comparably to our studies, multiple works have shown that AACC is a predominant condition [5] [7]. The psychological narrowing of the iridocorneal angle and the reduced anterior chamber in women significantly favors the occurrence of this condition [8].

The genetic theory in the development of glaucoma is well-known and well-documented. It has been reported that the risk of developing AACC is 2% to 5% more likely if first-degree relatives are affected. However, this prevalence decreases by half for second-degree relatives [9]. Thus, we can confirm that heredity is a risk factor in the occurrence of acute angle closure crises, especially in the broader context of glaucoma. A family history of glaucoma was found in 37.5% of cases in our series.

This condition is predominantly unilateral, but bilateral and simultaneous cases are described in the literature with a prevalence of about 5% to 10% [10]. The symptoms of these crises are pronounced, presenting with the classic tableau of a painful red eye and decreased visual acuity (DVA). DVA is generally marked and often quantified as less than 1/10 in over 80% of cases [1] [11].

In acute angle closure crisis, acute ocular hypertonia is a major and consistent sign of the clinical presentation, with an average intraocular pressure of around 50 mmHg [1] [5] [12]. Acute hypertonia, once established, causes a significant reduction in the secretion and elimination of aqueous humor. This blockade subsequently reduces nutritional factors and the accumulation of toxic factors. These disturbances will destroy of a variable number of corneal endothelial cells, responsible for the corneal edema observed during AACC.

This ocular hypertonia also leads to ischemia of the iris, particularly its sphincter, which subsequently causes the mydriasis observed [9] [12]. In our series, all affected eyes exhibited cloudy corneas, mydriasis, and ocular hypertonia.

When possible, the fundus examination reveals a normal optic disc or one that is slightly swollen and congested due to the acute interruption of axoplasmic flow created by the acute crisis. However, it is common to find an excavated op-

tic disc in cases of repeated crises or concomitant glaucoma during the crisis [10]. The high rate of pathological excavations observed in our study (70%) and the similar presentation found in patient histories (33.33%) suggest that many of our patients likely experienced intermittent angle closures before the acute episode.

The increase in lens volume is an established risk factor for AACC, resulting from the progressive increase in lens thickness, like cataracts. This leads to angle closure due to an elevation of the lens length-to-eye length ratio [3].

Despite its critical importance for diagnosis, gonioscopy is often challenging during the acute phase due to corneal edema and pain [10]. In our series, we were able to perform gonioscopy in only 28% of eyes due to the sensitivity of the eye and corneal edema in the acute phase.

Our study has certain limitations such as the lack of information on the refractive status of the patients, the low rate of gonioscopy results, and the absence of paraclinical tests. These limitations result from the urgency of patient care and a considerable number of patients failed to follow. In fact, over 50% of our patients did reside in rural areas.

5. Conclusion

Acute angle closure crisis is a major ophthalmic emergency that can affect visual prognosis following the occurrence of acute angle closure glaucoma. It is a rare condition in Melanodermas, with a clear predominance in women. Eye biometrics, heredity, and an increase in lens volume are factors implicated in the development of this condition. Gonioscopy is essential for diagnosis.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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