

Corneal abscesses: 5 years experience in tertiary eye care center

ABSTRACT :

Aims : to define the epidemiological, clinical, bacteriological, therapeutic and progressive characteristics of severe corneal abscesses treated in a tertiary eye care center.

Study Design : Retrospective Study.

Place and Duration of study : the ophthalmology department of The Mohammed V Military Medical Training Hospital in Rabat, and covering patients with corneal abscesses from January 2014 to December 2018.

Results : We report 30 cases of severe corneal abscess. With a sex ratio of 1.2 , average age of 42.20 years, ranging from 16 to 74 years. The average consultation time after the onset of the first symptoms was 6.6 days with extremes of 2 to 14 days. The initial visual acuity, at the time of hospitalization, was between 03/10 and absence of light perception. The diameter of the abscess was between 2 and 5 mm in 6 cases (20%) and greater than 5 mm in 24 cases (80%). For 4 patients the light perception was negative before hospitalization. For 5 patients, the infection did not have much impact on function of which two patients recovered 10/10 , and for 16 patients the acuity remained reduced (between positive light perception at 01/10). Eight patients were cold programmed for corneal transplantation. And 4 cases for evisceration.

KEYWORDS: corneal abscess; severe; epidemiology

INTRODUCTION

Corneal abscesses are a group of serious conditions, it is one of the main causes of corneal blindness. The prevalence of this condition is constantly increasing[1], due to the frequency of risk factors. Epidemiological and microbiological characteristics are variable. The main risk factors for corneal abscesses are eye trauma in developing countries and contact lens wear in industrialized countries[2] This serious pathology and reserved prognosis is formidable because of the difficulty of its etiological diagnosis and therapeutic management. The positive diagnosis is clinical. The etiological diagnosis is essentially microbiological, based on corneal samples[3] Therapeutic management must be early and oriented according to the etiological investigation and abscess appearance to avoid the occurrence of serious complications and permanent sequelae[4]. Corneal perforation and endophthalmitis are the most serious complications and visual acuity is often reduced by central corneal opacity[5]. The purpose of our study is to define the epidemiological, clinical, bacteriological, therapeutic and progressive characteristics of severe corneal abscesses treated in the ophthalmology department of the Mohamed V Military Training Hospital (HMIMV) in Rabat (Morocco).

MATERIALS AND METHODS:

39 This is a retrospective study of a series of 30 eyes from 29 hospitalized patients in the ophthalmology
40 department of the HMIMV in Rabat between January 2014 and December 2018. Our inclusion
41 criteria were: an abscess diameter greater than 2 mm and a depth greater than 50% of the corneal
42 thickness, a state of immunosuppression, poor treatment compliance, central location of the lesion,
43 intraocular inflammation, pre-perforation and a fortiori perforation. The exclusion criteria were: Any
44 non-severe abscess with a diameter less than 2 mm and a depth less than 50% of the corneal
45 thickness, with paracentral location.

46 The parameters studied were: age, sex, time of consultation after symptom onset, risk factors, initial
47 and subsequent visual acuity (evaluated by the Snellen scale), the microbiological results of the
48 corneal samples taken, treatment introduced in the department and evolution. We also took into
49 account the following clinical characteristics: the size of abscess, location (central, paracentral,
50 peripheral), existence of a Endocular inflammation. For each abscess a corneal scratching was
51 performed.

52 **RESULTS :**

53 We have reported 30 cases of severe corneal abscess in 29 patients over a 5-year period.

54 The sex ratio was 1.2 (16 men to 13 women). The average age was 42.20 years, ranging from 16 to 74
55 years.

56 The infringement was always unilateral (40% Odt and 60% OGche) except in one case.

57 The average consultation time after the onset of the first symptoms (redness of the eyes, pain and
58 decreased visual acuity) was 6.6 days with extremes of 2 to 14 days.

59 Eight risk factors were objectively assessed in 27 patients, representing 93.1% of cases, including
60 some with two risk factors at the same time (**Table I**)

61 Clinical aspects :The initial visual acuity, at the time of hospitalization, was between 03/10 and
62 absence of light perception. On initial examination, 27 abscesses were central (Figure 1) and 3 were
63 paracentral. There was no inflammatory reaction of the anterior chamber in 10 cases (33.3%) with
64 hypopion in 6 cases, and in 7 cases (23.3%) the anterior chamber was not examinable because of the
65 large volume of the abscess. The diameter of the abscess was between 2 and 5 mm in 6 cases (20%)
66 and greater than 5 mm in 24 cases (80%).

67 Microbiological characteristics : A germ was identified in 14 patients (48.2%). Multimicrobial damage
68 was found in 10 patients. Staphylococcus coagulase negative and Pseudomonas aeruginosa were the
69 most common germs. (**Table II**)

70 **EVOLUTION :**

71 The average length of hospital stay was 19 days (extremes from 7 days to 27 days), and the average
72 follow-up of patients was 6 months. Two patients were lost to follow-up.

73 The complications observed were: corneal perforation in 6 patients, corneal neovascularization
74 (Figure 2) in 12 patients, and a disabling corneal flap in 21 patients.

75 For 4 patients the light perception was negative before hospitalization. For 5 patients, the infection
76 did not have much impact on function of which two patients recovered 10/10 , and for 16 patients
77 the acuity remained reduced (between positive light perception at 01/10).

78 Eight patients were cold programmed for corneal transplantation. And 4 cases for evisceration.

79 **DISCUSSION :**

80 This study concerns severe corneal abscesses that required hospitalization, thus excluding cases of
81 corneal abscesses that responded well to outpatient treatment.

82 In our series corneal abscesses affect all age groups, with a predilection of the adult whose age varies
83 between 16 and 74 years, and with a slight male predominance, 16 men for 13 women (sex-
84 ratio=1.2). These results are consistent with the data in the literature[6].

85 Risk factors are identifiable in more than 9/10 cases (90%) in large series[3] (27/29 cases (93.1%) in
86 our series). They vary from one region to another. Indeed, eye trauma is the leading cause of corneal
87 abscess in developing countries, 65.4% in southern India[6] while hydrophilic soft lens wear is the
88 leading cause in industrialized countries[7], 52% in the United States[8] and 26% in New Zealand[5].

89 In our series the wearing of contact lenses (24.1%) and eye trauma (20.6%) are the most frequent
90 causes and in 3rd place (13.4%) cataract surgery, corneal ulcer on dry eye syndrome and diabetes
91 complicated diabetic retinopathy or not, in 4th place the pillowcases on ulcer of cornea, and the
92 other risk factors also identified were immunosuppression on cancer and self-medication with eye
93 drops containing corticosteroids.

94 Our germ isolation rate was 48.2% close to that of the American series (53% to 73%)[2]. The relative
95 frequency of the different bacteria responsible for corneal abscess varies greatly from one region to
96 another[5]. Pseudomonas is the most common bacterium in Bangladesh (30%)[9] (1983), Taiwan
97 (37.7%)[10] (2004) and France (29.2%)[2] (2006), Staphylococcus aureus in India (65%)[11] (1983),
98 Streptococcus pneumoniae in South Africa (38%)[12] (1985). In our series staphylococcus coagulase
99 negative is the most incriminated germ (20.6%), compared to the results of the study by Bourcier et
100 al, whose staphylococcus coagulase negative was isolated in one third of cases[13], pseudomonas
101 aeruginosa was also the most incriminated germ in our series with the same percentage (20.6%)
102 (only contact lens wearers).

103 The treatment was based on intensive topical antibiotic therapy including a loading dose and a
104 maintenance dose. Since these are serious abscesses, we have given as a first-line treatment after
105 corneal sampling of fortified eye drops, prepared extemporaneously, vancomycin 50mg (against
106 gram-positive) and ceftazidime 25mg (against gram-negative), the treatment is adjusted afterwards
107 according to the results of the antibiotic susceptibility test. The indication for systemic antibiotic
108 therapy should only be considered if there is a risk of generalization of an infection with an ocular
109 starting point or if corneal perforation raises concerns about the spread of the infection[5].

110 The use of local corticosteroids (subconjunctival) is a controversial issue: they are very useful to
111 reduce the extent of stromal scars and synechia. They were prescribed only when the infection is
112 under control, and under strict ophthalmological supervision.

113 The unfavourable functional evolution was due to the delay in consultation after the onset of
114 functional symptomatology (mean time of 7 days from 2 days to 14 days), but also to the importance
115 of the inflammatory reaction of the anterior chamber, the virulence of the germ and the initial poor
116 visual acuity.

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118 **Limitation of the study :**

119 **The limits of our study reside intrinsically foremost in its retrospective and descriptive type, resulting**
120 **in incorporating selection biases. In addition, sometimes incomplete records and extraction of data**
121 **represent a major bias in order to draw the most representative profile of our corneal abscesses.**

122 **CONCLUSION :**

123 Corneal abscess is a serious disease, which is one of the main causes of corneal blindness. It can be,
124 in order of frequency, of bacterial and/or fungal and/or amoebic origin. The prevalence of this
125 condition is constantly increasing. The management of corneal abscesses is difficult, it is a real
126 emergency therapeutic, it is based on a prior analysis of the risk factors, the mode of infection, and
127 an adapted search for the germ in question. Hospitalization is often necessary to ensure the rapid
128 initiation of optimal treatment and close monitoring.

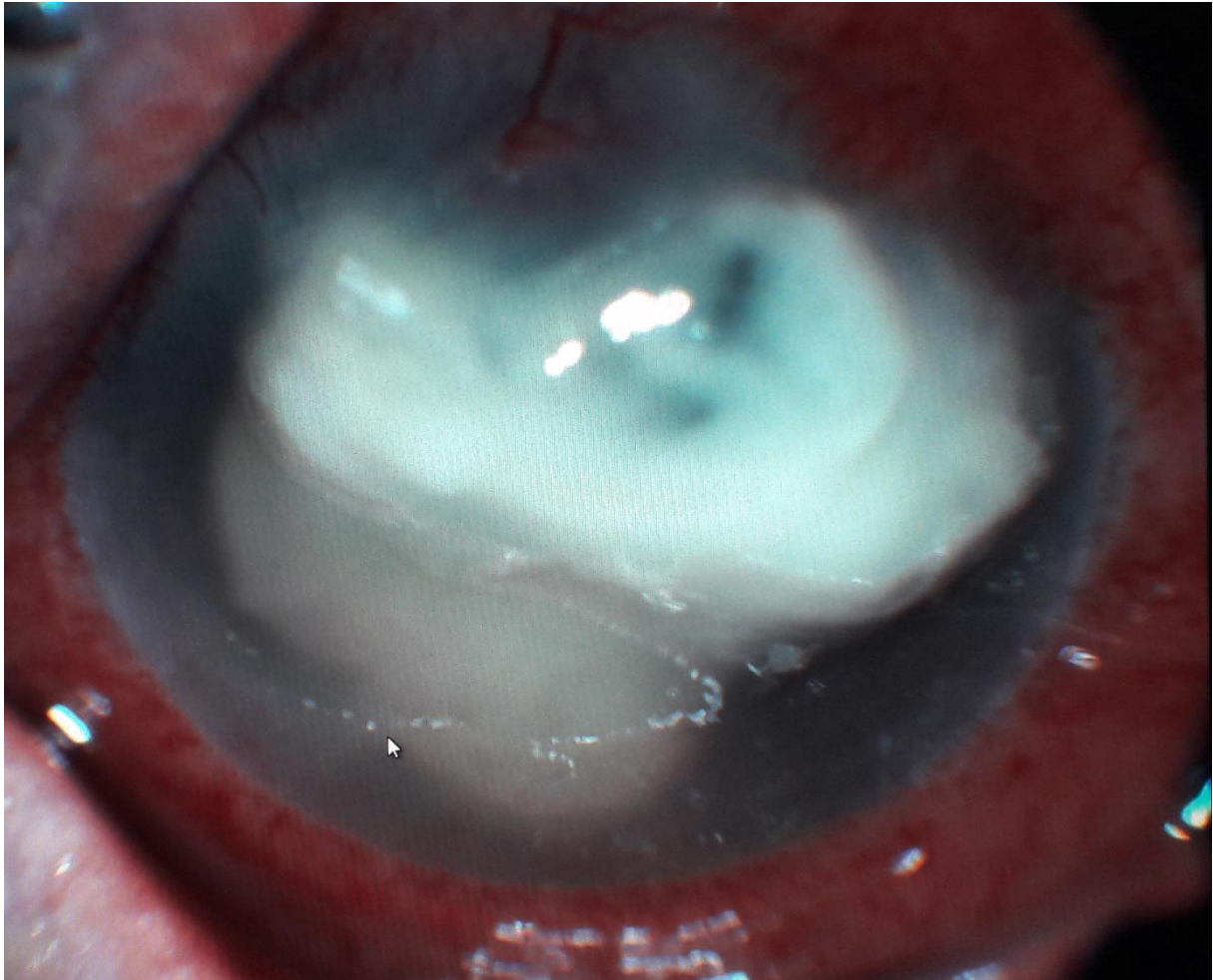
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161 **Figure 1: Large central corneal abscess**

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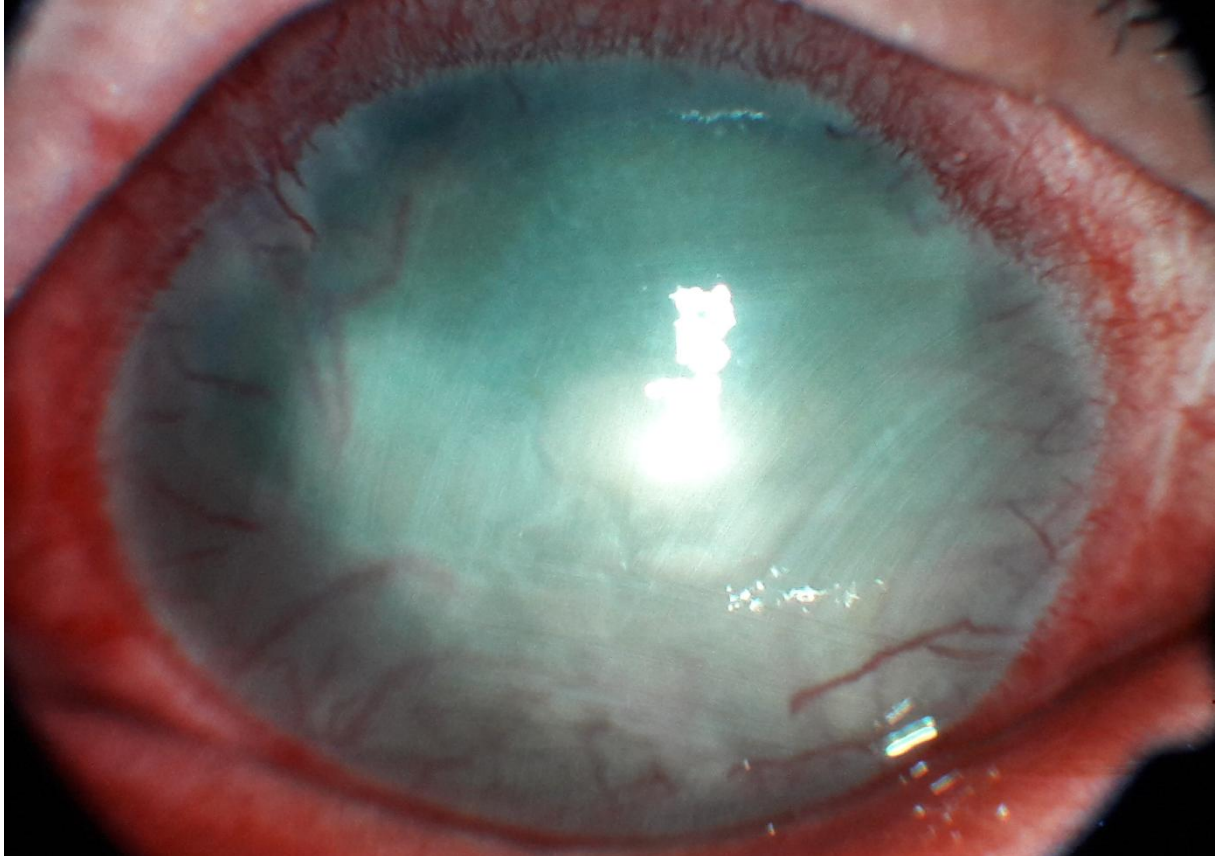
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174 **Figure 2: Central corneal flap with neovascularization**

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RISK FACTORS	NUMBER OF CASE	PERCENTAGE
Wearing contact lenses	7	24 , 1%
Eye trauma	6	20, 6%
History of cataract surgery	4	13, 7%
Diabetes +/- diabetic retinopathy +/- neovascular glaucoma	4	13, 7%
Corneal ulcer on dry eye syndrome	4	13, 7%
Cover on corneal ulcer	3	10, 3%
Immunosuppression: radiochemotherapy for bladder cancer or cavum cancer	2	6, 8%
Self-medication by eye drops containing corticosteroids	2	6, 8%
Not found	2	6, 8%

185 **Table I** : DISTRIBUTION OF RISK FACTORS IN OUR SERIES.

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GERMS	NUMBER OF CASE	PERCENTAGE
Staphylococcus coagulase negative	6	20,6%
Pseudomonas aeruginosa	6	20,6%
Staphylococcus aureus	5	17,2%
Enterocoque	2	6,8%
Neisseria specis	1	3,4%
Streptocoque	1	3,4%
Haemophilus specis	1	3,4%
bacillus	1	3,4%
Serratia maresceus	1	3,4%
Pyogens groupe A	1	3,4%
Candida albicans	1	3,4%
Sterile samples	15	51,7%

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203 **Table II:** DISTRIBUTION OF GERMS IN OUR SERIES

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