

Effect of perioperative subconjunctival gentimcin as prophylaxis against acute postcataract surgery endophthalmitis in Al-Sader medical city in Najaf

تأثير استخدام عقار الجنتاميسين كوقاية ضد التهاب مقلة العين الجرثومي بعد عملية رفع الماء الابيض

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Abstract:

Purpose: To investigate the effect of use of subconjunctival injection gentimicin as propylaxis against acute postoperative endophthalmitis (POE) following cataract surgery in Al-Sader medical city in Najaf during a 10 months period.

Methods: Clinically presumed cases of postoperative endophthalmitis (POE) were reported in a prospec-

tive survey involving ophthalmic clinic for all ophthalmologist that doing the operation inside Al-Sader medical city except one who is give topical gentamicin following cataract surgery . Data on result

on 2 groups 1st taken subconjunctival gentamicin and 2nd not, as well as patient age and gender and various elements of the surgical procedure, were collected.Then I follow-up all the patient for 4weeks for acute post operative endophthalmitis.

Aim of the study;To know if the subconjunctival gentamicin following cataract surgery is benifital as prophylaxis against acute post operative bacterial endophthalmitis or not.

Material And Method

The present study is based upon of 600 patients with cataract surgery, divided into two equal groups one of them received subconjunctival injection of gentamicin postoperatively and the other not. of different ages , sex over the period from November 2011 – october 2012 .

On admission general medical and ophthalmological history review was carried out D.M ,blepharitis, HT &prolong drug use as topical steroid &antibiotics .

All patients underwent same examinations including visual acuity, refraction , the Intraocular pressure , slit lamp Examination Of lids conjunctiva , cornea , Anterior chamber ,pupil & posterior segment .

At the time of operation , the method of cataract extraction together with the time consumed . any operative complications that occurred during the operation was also noted &also the surgeon that doing the operation either senior or post graduate student also noted. On discharged , the patient was instructed to be followed , on the 7th day , 14 day , 21day&28 days postoperatively for endophthalmitis .

Results

The study sample consisted of 600 patients with cataract surgery, divided into two equal groups one of them received subconjunctival injection of gentamicin postoperatively and the other not. The results showed

that 317 (52.8%) was males and 382 (47.2%) was females, the age range of them was 4-90 with mean and standard deviation of (62.5±11.5).Three patients (0.5%) developed endophthalmitis

Conclusions: There was no statistical significance between the postoperative subconjunctival injection of gentamicin and the prevention of endophthalmitis as $x^2= 0.335$, $df=1$, p value=0.5 as shown in table4.

الخلاصة:

الغرض:

عمل دراسة لمعرفة أثر استخدام الجنتاميسين بحقنه تحت منظمة العين كخطوة أخيرة في عملية رفع الساد في منع حدوث التهاب مقلة العين.

المكان: قسم العيون مستشفى الصدر التعليمي

طريقة البحث:

تمت الدراسة على 600 مريض اجري لهم سحب ساد العين تم تقسيمهم الى قسمين متساويين بشكل عشوائي ، القسم الأول يتم إعطائهم حقنة الجنتاميسين بواسطة جراحيهم. والقسم الآخر لم يتم إعطائهم الحقنة من قبل جراحيهم علما بأنها طريقة متبعة عندهم وليس من اجل البحث. بعدها تمت متابعة المرضى لمدة شهر بعد العملية لتدوين الحالات التي اصيبت بالتهاب مقلة العين.

النتائج:

وجد ان استخدام الجنتاميسين في منع حدوث التهاب مقلة العين غير هام احصائيا".

Introduction

One of the ultimate aims of the ongoing research project is to improve the quality of the surgical procedure.

As an important safety parameter, the feared complication of postoperative endophthalmitis. The main objective of this prospective study was to determine the effect of subconjunctival gentamicin perioperatively as prophylaxis against post operative bacterial endophthalmitis .

As the data were collected within 10 months, information regarding patient age and gender and parameters relating to surgical technique were accessible and screened for possible associations with postcataract surgery endophthalmitis POE.

Acute postoperative Endophthalmitis Pathogenesis is estimated incidence of acute endophthalmitis following cataract surgery is approximately 0.3%. Toxins produced by the infecting bacteria and the host inflammatory responses cause rapid and irreversible photoreceptor damage, and these effects can continue long after the ocular contents have been rendered sterile The source of infection usually cannot be identified with certainty. It is thought that the flora of the eyelids and conjunctiva are the most frequent source, including contamination via incisions in the early postoperative stages (1,24,25).

Staphylococcus epidermidis, staphylococcus aureus & Streptococcus pneumonia all of these organism have been isolated as normal flora of the skin of Eyelids mobamian gland&conjunctiva(25.20).

Other potential sources include/ contaminated solutions and instruments, environmental air, and the surgeon and other operating room and personal[1].

Diagnosis

Endophthalmitis may present in an acute form or in a more indolent or chronic form; The symptoms of endophthalmitis include mild to severe ocular pain, loss of vision, floaters , and photophobia. The hallmark of endophthalmitis is vitreous inflammation, but other signs include eyelid or periorbital edema, ciliary injection, chemosis, anterior chamber reaction,

hypopyon, decreased visual acuity, corneal edema, and retinal hemorrhages[1,21]

Acute endophthalmitis typically develops 1-4 days postoperatively[2,20] or within 3-4 weeks following surgery [-]and runs fulminant course. Decreasing vision and increasing pain and inflammation are hallmarks. Early

diagnosis is extremely important, as delay of treatment can substantially alter the visual prognosis.

Chronic Endophthalmitis(32) uveitis following cataract surgery has been reported in association with lowgradebacterial pathogens, including *Propionibacterium awes* and *5 epidermidis*. Uveitis patients may have an unremarkable early postoperative course and lack the classic findings of acute endophthalmitis. Weeks or months after surgery, however, these patients develop chronic uveitis that is variably responsive to topical corticosteroids. The possibility of microbial endophthalmitis should be investigated in patients who have persistent uveitis without a previous inflammatory history.(33) (35)

the chronic form caused by another types of gram positive bacteria called corynebacterium spp.[11,21,3] .The organism is not sensitive to aminoglycosides(34)

Pathogens. About 90% of isolates are Gram-positive and 7-10% Gram-negative(1,3,21). In order of frequency they include:

- Coagulase-negative staphylococci (*staphylococcus epidermidis*)about 50 -70%(18,21) . Is is aerobic catalase positive,coagulase negative,carried at least 30%of normal Population(23)and has abetter visual Prognosis than staphylococcus endophthalmitis following treatment(19)
- Other Gram-positive organisms (*Staphylococcus aureus* and *Streptococcus pneumoniae*, streptococcus viridians,streptococcus pyogenes[4].
- Gram-negative organisms (*Pseudomonas* spp. and *Proteus* spp.)7 -10% . All these type can cause acute endophthalmitis but the chronic form caused by another types of gram positive bacteria called corynebacterium spp.[11,21,3]

Gentamicin

Postoperative subconjunctival injection of gentimicin sulphate 10-20mg can achieve bactericidal levels in the anterior chamber for at least 1–2 hours[5]. Subconjunctival injections of antibiotics deliver high levels to the aqueous humour.Gentamicin is from the aminoglycoside group of bactericidal antibiotic,it exerts its actions at the site of the ribosome by preventing the first ribosome from joining with messenger RNA ,it may also cause the messenger RNA code to be misread so that the wrong amino acid is incorporated into the protein.Gentimicin is effective against aerobic Gram negative baclli,including pseudomonas andresistent proteus strain.[6]

Adverse Effect of subconjunctival Gentimicin

- 1.Induction of acute extraocular muscle toxic myopathy[7]
- 2.Persistent biocular diplopia due to extraocular muscle toxic myopathy[8]
- 3.Induce lipidoses of cornea and conjunctiva[9]
- 4.Toxic retinopathy[10]
- 5.Conjunctival blanching [37]
- 6.Macular infarction[1]

Material And Method

This is a randomized prospective study based upon of 600 patients with cataract surgery, divided into two equal groups one of them received subconjunctival injection of gentamicin postoperatively and the other are not . of different ages , sex over the period from November 2011 – october 2012 .

On admission general medical and ophthalmological history review was carried out D.M ,blepharitis, HT &prolong drug use as topical steroid &antibiotics .

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Result

The study sample consisted of 600 patients with cataract surgery, divided into two equal groups one of them received subconjunctival injection of gentamicin postoperatively and the other not. The results showed the following..

- 1- That 317 (52.8%) was males and 283 (47.2%) was females, the age range of them was 4-90 with mean and standard deviation of (62.5±11.5).
- 2- There was no statistical significance between the postoperative subconjunctival injection of gentamicin and the development of endophthalmitis as $\chi^2 = 0.335$, $df=1$, p value=0.5 as shown in table 4.
- 3- Three patients (0.5%) developed endophthalmitis ,Two males and one female from the sample developed endophthalmitis with no significant statistical difference ($\chi^2=0.23$, $df=1$, p value=0.63) as shown in table 5
- 4- There was no significant statistical association between mean age of those with endophthalmitis and those without endophthalmitis ($t=0.53$, $df=598$, $p=0.59$) as shown in the table 6.

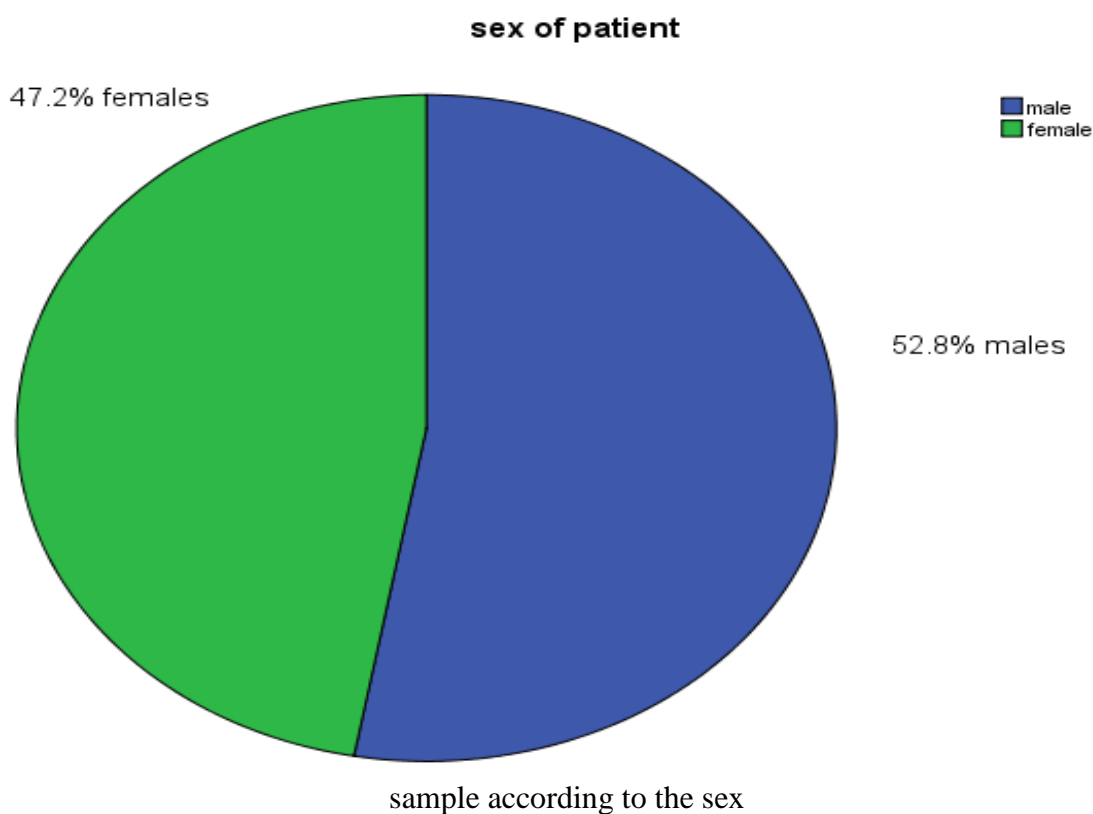


Table 1: age distribution of the sample

Age (years)	No.	%
<40	18	
40-49	32	
50-59	104	
60-69	249	
70-79	164	
≥80	33	

Table 2: distribution of the study groups according to the age

		No.	range	minimum	maximum	mean	SD
Gentamycin	yes	300	78	12	90	64.35	10.93
	no	300	86	4	90	60.69	11.78

Table3: distribution of the study groups according to the sex

		No.	male	%	female	%
Gentamycin	yes	300	152	50.7	148	49.3
	no	300	165	49.3	135	45

There was no statistical significance between the postoperative subconjunctival injection of gentamicin and the development of endophthalmitis as $\chi^2= 0.335$, $df=1$, p value=0.5 as shown in table5.

Table 4: relation between treatment group and endophthalmitis

		Treatment group		Total
		With gentamicin	Without gentamicin	
endophthalmitis	yes	2	1	3
	no	298	299	597
Total		300	300	600

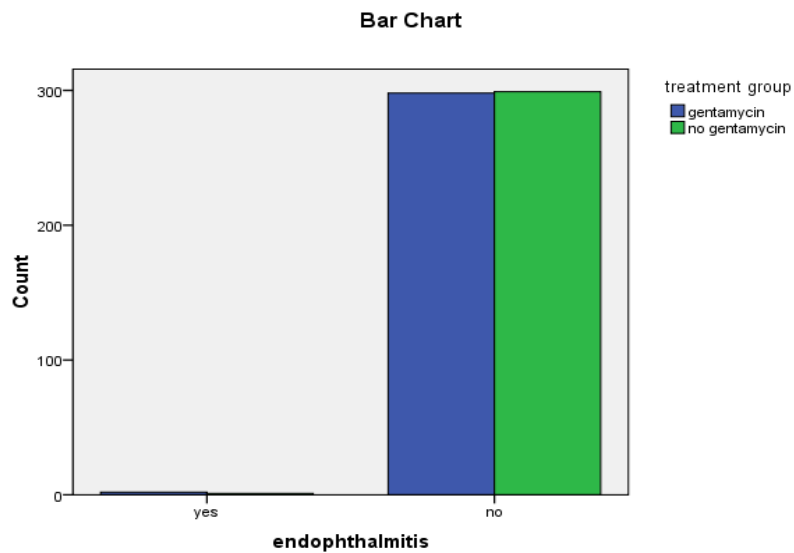


Figure 2:relation between treatment group and endophthalmitis

Two males and one female from the sample developed endophthalmitis with no significant statistical difference ($\chi^2=0.23$, $df=1$, p value= 0.63) as shown in table 6

Table 5: relation between sex of patient and endophthalmitis

		Sex of patient		Total
		Male	Female	
endophthalmitis	yes	2	1	3
	no	315	282	597
Total		317	283	600

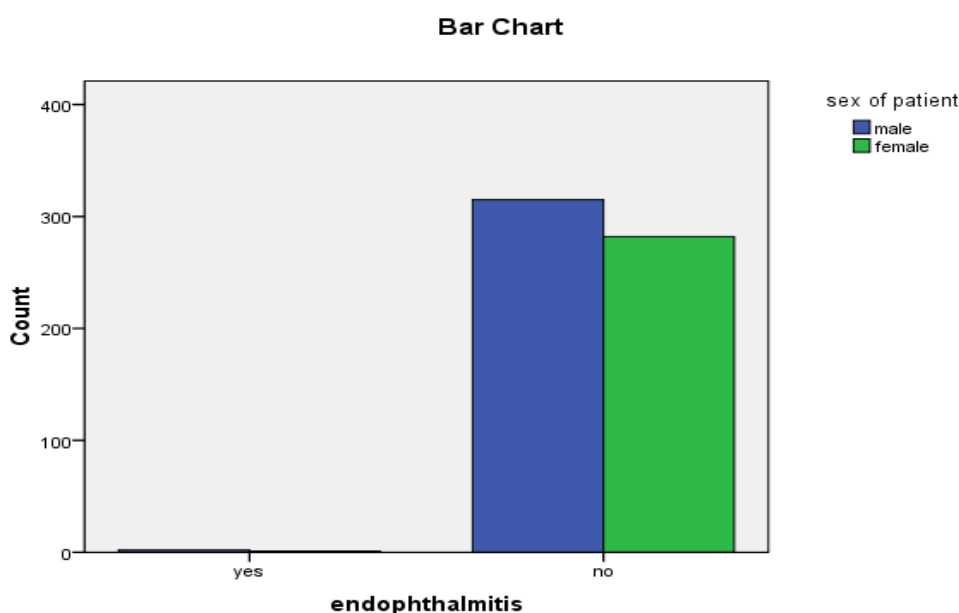


Figure5: relation between sex and endophthalmitis

There was no significant statistical association between mean age of those with endophthalmitis and those without endophthalmitis ($t=0.53$, $df=598$, $p=0.59$) as shown in the table 6

Table 6: relation between age and endophthalmitis

endophthalmitis		N	Mean	Std. Deviation	Std. Error Mean
Age	Yes	3	59	6.557	3.786
	No	597	62.55	11.515	.471

Discussion

This is the prospective study on post-operative endophthalmitis(POE) following cataract surgery to be presented in the last year .

As there was no collection of data on some parameters that may influence the frequency of POE, such as presence of diabetes or perioperative complications,

1. The Three patients that have POE no one had a history of Diabetes or Intraoperative complications results of our risk factor screening must be interpreted with much caution.(36).
- 2- That 317 (52.8%) was males and 283 (47.2%) was females, the age range of them was 4-90 with mean and standard deviation of (62.5±11.5).

- 4- There was no statistical significance between the postoperative subconjunctival injection of gentamicin and the development of endophthalmitis as $\chi^2 = 0.335$, $df=1$, p value=0.5 as shown in table 4.
- 5- Three patients (0.5%) developed endophthalmitis ,Two males and one female from the sample developed endophthalmitis with no significant statistical difference ($\chi^2=0.23$, $df=1$, p value=0.63) as shown in table 5.
- 6- There was no significant statistical association between mean age of those with endophthalmitis and those without endophthalmitis ($t=0.53$, $df=598$, $p=0.59$) as shown in the table 6.

Conclusions:

There was no statistical significance between the postoperative subconjunctival injection of gentamicin and the prevention of endophthalmitis as $\chi^2 = 0.335$, $df=1$, p value=0.5 as shown in table5.

Recommendation:

According to this study we recommend to the cataract surgeon not to use the sub-conjunctival gentamicin injection because it,s not effective in prevention endophthalmitis post-cataract surgery and also to avoid any possible complication from usage of gentamicin which mentioned above, and also we recommend to increase the sample size to decrease the bias in the study.

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