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Heparin sodium uses in children's cataract surgery

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Abstract

After cataract extraction of the child's eye, the vision is reversed (decreases), because after surgery Fibrin is found in anterior chamber, for prevention of formation fibrin we use heparin and does not decrease the vision. The aim of this research is to study of use and non-use of heparin in children eye surgery, differentially. This is case control study conducted on sartan 1397 to jawza 1398 within one year on 30 patients in University Teaching Hospital Eye ward.

In group A, there were 14 eyes that used heparin sodium in surgery and in group B there were 16 eyes that had surgery with no heparin sodium uses. Statistical analysis of the study revealed that the odds ratio is 7.714 that is seven times greater use of heparin with improvement and better result. the p valve is 0.0256 which is very close to the fact and Z statistic is 2.233.

In research group A in which we used heparin in cataract surgery 2 eyes 14, 28% had a posterior capsule density, one patient had a posterior synechia that gave 7, 14%, and two patients who had hyphaemia that gave 14,28%,that mean anterior chamber had blood . In B group three eyes pupil completely close mean had occulosive pupil 18, 75%.

In the study 14 female gender 46, 66% and 16 male genders 53, 33 % were in observation.And research has shown that the use of heparin to prevent the complications of cataractsurgery in children is most likely having good result.

Key words: Heparin, Congenital cataract, Vision, Anterior chamber, Posterior capsule opacity

Introduction

All parts of the eye contribute to the light visualization. That the value of each part have difference from that of the other part. If the eye is healthy from the point of view of anatomy and physiology and there is density in the lens, the eye cannot be seen and the human being is deprived of this great blessing if we do cataract surgery mean cataract extraction the vision will become to past condition

Sometimes, due to some complications, the back vision is damaged or completely destroyed, due to posterior capsule thickness or density in IOL or due to synechia or due to fibrotic materials during inflammation in pupil. But if heparin sodium is used in Ringer lactate during the surgery maybe prevent complications mentioned above. (3, 4, 8, 9)

In this part , a study was conducted in Turkish Islamic country on a group of 33 patients whowere between the age of 3-18 years in group A there was 14 patients who did not use heparinin the surgery and 19 persons in group B Heparin was used in the ophthalmic surgery .differentially in group B there was one patient who had posterior capsule thickness andsynechia www.dovepress.com

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In patients Post-operative worsening of the vision due to fibrotic materials and inflammation can even lead to blindness, which is more frequent in children than in adults, sometimes accompanied by glaucoma. The percentage is higher for the low vision,The reason for the failure of this surgery is that the solution to this problem is greatly reduced with the use of heparin sodium in the washing solution. This study show that the problems and complication becoming after surgery can prevent with heparin use (1, 4, 8, 10)

Review of Medical Literature

After the cataract surgery of children's, due to inflammatory reaction fibrin materials are often found in the anterior chamber, which absorb these fibrinous materials into artificial IOL, pupil, iris finally Density, synechia and pupil occlusion may come which result loss of vision and loss of eyes, Heparin sodium prevents the formation of anti-inflammatory and fibrinous materials , preventing the complications mentioned. Heparin sodium is considered to have no adverse effects. The consequences adverse effect have not been recorded yet.

In this part , a study was conducted in Turkish Islamic country on a group of 33 patients who were between the age of 3-18 years in group A there was 14 patients who did not use heparin in the surgery and 19 persons in group B Heparin was used in the ophthalmic surgery . Differentially in group B there was one patient who had posterior capsule thickness and synechia (1, 9, 14, 18, and 19)

The study found that in the first group of patients who used heparin sodium, the percentage of complications was indeed lower in these patients and the level of inflammatory reaction was low The biggest benefit of heparin is preventing the formation of fibrin and the thickness of the posterior capsule. (Posterior Capsule) has been shown in more than 95.8% of the studies after the surgery of the pediatrician. http //www.dovepress.com

As heparin sodium take action to stop reaction due to epithelial cells and other residues of lens and prevent density of the posterior capsule or PCO which cause low vision . Our study has shown that in A group one 1 has a high incidence density, and the highest in group B is involved in six cases (6,8,9). A group patient have blood in anterior chamber But there is no complication in group B because heparin sodium is an anti-inflammatory drug, thus giving rise to bleeding but not a serious complication, after one week or ten days of blood is completely drained. There should be no problem for this. Therefore the use of heparin sodium in children's eyes surgery increases benefits (9, 10, 17, 18, and 19).

Heparin Structure

Heparin sodium is an anti-coagulating drug preventing blood clotting in the veins, arteries, nerves, and lungs , biological half-life is 1.5 hour metabolites in the liver, execrate through the bladder.

The chemicals are C12H19NO20S3. holds at 1 to 5 degrees. Prevents the formation of fibrin and prevent activation of inflammatory cells

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Adverse effects: The worst side effects are blood thinning, and thrombocytopenia due to heparin has been reported, although no adverse effects have been recorded in the cataract surgery eye (1, 12, and 17).

Uses: are used in the vein, under the skin and in the washing solution

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Optic media is the eye area that passes through the rays is called optic media, which has four types. The cornea (the first part of the optic media) the Aqueous Humor (a water-like liquid that is present in the anterior and posterior chambers) Lens (a transparent, convex, crystalline body) Vitreous Humor (transparent jelly liquid) Locates in the posterior segment (1,12,16,19).

The study for a period of one year conducted on sartan 1394 to jawza 1395 within one year on 30 patients in University Teaching Hospital Eye ward.

The study includes a cataract seat, heparin sodium vial, surgery room, surgery microscope, bed room where the patient is taken after bed, OPD room, slite lamp, hand hold light, research work form and ophthalmoscope.

Children under the age of one year and up to 12 years have undergone full screening for all patients in the study, children who had white pupil (if they have lens density or have retinoblastoma, black pupil will see white) perform Distant Funduscopy with an ophthalmoscope to see the red reflex (if with dilated pupil up to 50 cm away from the ophthalmoscope if the optic media of the eye is transparent and there is no density, red Reflex will be seen)

If red reflex was not present or gray was observed the patient was examined by optical media density by a slit lamp. The work form would be filled in, all patients were scheduled for a general anesthetic surgery and all the tests required done before surgery.

Randomly, a patient would be given five units of heparin sodium sodium per Ringer lactate in a Ringer lactate 500cc and during surgery anterior and posterior chambers were wash out with this solution.

In the second group, non-heparin ringer lactate was administered in the B group subgroup, which is B in the control group there was no subconjunctival penetration of antibiotic or steroid and 24 hours later the dressing take off patient was examined and E/drop vigamox , E/drop Maxidex was given to patient for 40 days 12 times daily one droplet

One week later, Forty days and three months later, hypaemia in each visit will be checked, with the presence of blood in the anterior chamber most visible one day after surgery, posterior capsular opacification, iris occlusion, Synechia, The formation of a pupillary membrane and the symptoms of iridocyclitis are seen in the case. All information will be verified in the patient file

Dr. Abdul Basir Safi's role in the study was the surgery of the sixteen 16 eyes and the follow-up of the patients and the registration

Dr. Ibrarullah Rahimi's role in the surgery of the 14 eyes and their registrations and their follow-up during the operation. Provide heparin wash solution with each other

Terms of Inclusion

- Age is between one year and 12 years
- Congenital lens opacity
- No other congenital disease
- Agree to participate in the study

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• And be actionable for the surgery

Exclusion factors in the study

• If the eye has other congenital disorders

• Occupational diseases such as uveitis retinal diseases etc.

• corneal opacity is present.

• During surgery posterior capsule rupture and vitrous inserted

• The patient may not be consented.

Finding

Attenuation of the inflammatory reaction is seen more in children than in adults after cataract surgery if during surgery iris injured and there is infection in anterior chamber or lens materials in anterior chamber inflammation will become and during inflammation density will occur , however heparin sodium is anticoagulating , anti-inflammatory and prevent forming fibrin thus preventing the formation of fibrin after surgery and preventing fibroblast activity we use heparin sodium in children cataract surgery . In this clinical trial study, in visit of patient the anterior chamber was seen one week, 40 days and three months later. The findings of this study indicate that the heparin sodium concentration reduces the concentration of posterior capsule, which is statistical analysis of the study shows that the odds ratio is 0,701, which is a seven times better improvement compared with the nonuse of heparin. Statistical analysis of SPSS version21 pvalue 0.025 which is very close to the fact that it is Significant and Z statistic 2.233. (3, 6, 14, 18, 20)

In the study, the density of the posterior capsule is seen in both groups, clearly showing that the density in the B group is several times higher.

The following table shows the thickness of the posterior capsule

Group	Patients	Eyes	Posterior capsule thickness	Percentage
Group A (Heparin Used)	13	14	2	14,28%
Group B (Heparin is Not Used)	14	16	9	62,5%

The table shows that the density of the posterior capsule in group B is more than five times that of a group.

The number of right and left eyes in the table shows

Eye	A	B	Total
Right	8	6	14
Left	6	10	16
Total	14	16	30

The table shows that the right eye is more visible in group A and the left eye is more operative in group B.

Differentially complication of operative eyes

Complication	Group A	Percentage	Group B	Percentage
Hyphaemia	2	14,28%	0	0

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Ant synechia	0	0	1	6,25%
Post synechia	2	14,28%	8	50%
PCO	2	14,28%	10	62,5%
Pupillary membrane	0	0	8	50%
Inflammatory exudates	0	0	5	31,25%

The number of complications seen in the B group is higher than that seen in the table after the surgery. The above table shows that the incidence of all complications is higher in the B group and obviously the incidence of complications in group patients is reduced.

Age is seen as in less age complications increases

Table of Contents for the Birth of a Child on the Age

Age	Group A	Percentage	Group B	Percentage
1y -3 y	6	42.85%	6	37.5%
3y- 6y	4	28.57%	7	43.75%
6y-9y	3	21.42%	3	18.75%
9y-12y	1	7.14%	2	12.5%
Total	14	100%	16	100%

The table shows that in both groups, from one year to six years the cataract surgery is higher than the other years.

My case study is a case control study of A, B and C, D are adjusted accordingly

Heparin is not used Heparin is used	Heparin not used	Heparin used	
19	B7	A12	Posterior capsule density is not given
11	D9	C2	Posterior capsule density is given
30	16	14	

Statistical analysis of the study revealed that the odd ratio is 7.714, which means that with the use of heparin seven times better than non-use or the right end. p value is seen 0.0256 which is very close to the fact and Z statistic is 2.233 (www.MedCalc software bvba.com).

Discussion

The pathology of the inflammatory fibrin formation after surgery is not yet known precisely, but in inflammation the defect of aqueous humor and Blood aqueous barrier (BAB), Increased eye ball pressure (pre-operative high intraocular pressure (IOP)) before the surgery and excessive interference during the surgery may result in the formation of fibers in the aqueous humor resulting in lens or in pupil formation of the fibers is the pathology.

Inflammation is more prevalent in children than adults in anterior chamber. (11,13,19) Due to inflammation increase the inflammatory cells in aqueous humor, such as fibroblasts and fibers, absorb in artificial lens and corneal endothelium causes synechia, the formation of the inflammatory membrane , the closure of the pupil by cataract. As heparin sodium prevents inflammation and fibrosis after surgery.

(2, 13, 16, 19) Various studies have shown that heparin is restricted to the activity of neutrophils in blood vessels to prevent inflammatory action. It also reduces complement

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activity and prevents the emergence of lymphocytes It also prevents the attachment of white cells in the extracellular area, thus reducing the absorbing of inflammatory cells on the IOL and preventing density. Our findings suggest that the addition of heparin sodium with BSS (standard solution of inner eye wash during operation) in children's cataract surgery is prevented by all the inflammatory and density-producing processes.

The study found that in the first group of patients who used heparin sodium, the percentage of complications was definitely lower in the patients and the reaction rate was also lower at the first visit unanimously proved that the addition of heparin sodium. The first and last mentioned complications were reduced and the result was good. The biggest benefit of preventing the formation of fibers is the thickness of the posterior capsule. PCO have been shown in more than 95.8% of studies since childhood operation.

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As heparin sodium has an effect on the epithelial cells of the lens and the rest of the lens, the capsule density is reduced. Our study has shown that A group has one incidence density and group B contains a maximum of six cases. However, in B there is no complication because heparin sodium is an anti-inflammatory drug so it can cause bleeding but it is not a serious complication and after a week or ten days the blood is fully absorbed and lost. No problem for sure as a result, the use of heparin sodium in children's cataract surgery is significantly higher, which is statistically significant with a 7.714 odd ratio, which results in numerical improvement or better results than heparin use seven times. The p value 0.0256 is seen to be very close to reality and the Z statistic is 2.233 (1, 4, 5, 6, 9,)

Conclusion

Heparin-containing fluid in the cataract surgery of the children reduces the complications after surgery, and reduces inflammatory process.

However after surgery of cataract in children inflammatory process is quicker than adults, Student's t-test p> 0.05, statistically no difference between the two groups

My research revealed that the odds ratio is 7.714 with heparin use seven times more often than non-use or the result is that the p valve is 0.0256 which is very close to the fact and Z statistic is 2.233

(www.MedCalc software bvba.com)

But the results showed that 93% percent of the population gave good results, ie two people in group A had a posterior capsule density or blurriness, whereas nine people in group B had a posterior capsule density, in both groups. There is no significant difference between the sexes.

Suggestions

1. Heparin sodium should be used in the washing solution for children's cataract surgery
2. It should be safe to avoid injury to the surrounding parts during surgery
3. Children's cataract operations are a good, easy and inexpensive surgery that maximizes the benefits of how quickly they are executed.
4. The use of heparin in the surgery of the children cataract has no complication. It should be used courageously
5. If adults have seizures or a traumatic cataract, heparin sodium should be used to reduce complications.

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