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RESEARCH ARTICLE

CORRLATION BETWEEN SQUINT AND HYPERMETROPIA

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ABSTRACT

Background: Squint (strabismus) is deviation of one of both eyes which can be paralytic (incomitant) or non-paralytic is due to many causes one of them the refractive error (hypermetropia, myopia and astigmatism). Strabismus may be esotropia (inward deviation of the eye) exotropia (outward deviation of the eye) / hypertropia (upward deviation of the eye) or hypotropia (downward deviation of the eye). Hypermetropia (long-sightedness): Is a common eye condition where nearby objects appear blurred, but the vision is clear when looking at things further away. Hypermetropia in children. Is usually genetic. Babies and young children may suffer from hypermetropia, but this should eventually correct itself. This happens as the eyeballs lengthen as they grow. However, a lazy eye may develop as a result. This is because the eye with the weakest vision is ignored by the brain. If this is not corrected in young children, there is a risk that the weaker eye will never see as the other eye, where is squint happen. **Objective:** this study amid to detected the correlation between squint and hypermetropia as the hypermetropia is the major cause of squint of children under 6 years old age. **Method:** This study conducted from November 2017 to March 2018. 100 cases from Ibn AL_Haytham hospital 45 male (45%) 55 female (55%) with squint (esotropia) their age from 5 months to 5 years are examined their refractive error. **Results:** in this study 100 cases of squinting eye of children age from 5 months to 5 years (45 mal and 55 female) where examine in Ibn AL_Haytham hospital from November 2017 to March 2018 according to the age and sex the result that 99% (mostly esotropia) got hypermetropia. **Conclusion:** There is correlation between squint and hypermetropia mostly in children so in this study 100 cases of squinting eye of children age from 5 months to 5 years (45 males and 55 female) where examine in Ibn AL_Haytham hospital the result that 99% (mostly esotropia) got hypermetropia (1.25 diopter to 8 diopter). This study highlights the close associations between refractive error (hypermetropia) and the prevalence of Squint (esotropia), which should be considered when managing childhood refractive error.

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INTRODUCTION

STRABISMUS or squint: Deviation of the eye Horizontal, Vertical, upward, downward, STRABISMUS also called crossed eyes among other terms, is a condition in which the eyes do not properly align with each other when looking at an object at an object at an object. The eye which is focused on an object can alternate. If present during a large part of childhood, it may result in amblyopia or loss of depth perception. If onset is during adulthood, it is more likely to result in double vision (Jack, 2007; Gobin, 1994 and Wilson, 1993).

Classification of STRABISMUS:

A- Paralytic (incomitant): The angle of deviation varies in different direction of gaze with restriction of the eye movement (esotropia, exotropia and Hypertropia, Hypotropia)

due to either muscle paresis or neuromuscular problem or an orbital disease (Jack, 2007; American Academy of Ophthalmology, 1993 and Baker, 1980).

1. Congenital
2. Acquired
 - Third nerve palsy (Exotropia)
 - Forth nerve palsy (Hypertropia)
 - Sixth nerve palsy (Esotropia)

B-Non paralytic (comitant): The angle of deviation is constant or equal in measurement in all direction of gaze, witj full ocular motility.

- Accommodative
- Non-accommodative
- Combined accommodative and Non-accommodative

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Causes of Strabismus (Jack, 1993; Baker et al., 1980 and Gobin, 1994)

- Congenital: imbalance between innervation and contraction
- Refractive errors (Hypermetropia, Myopia, Astigmatism)
- Paralysis or Neuromuscular disease
- Restrictive: thyroid eye disease
- Tumors

Esotropia: is a form of Strabismus in which one or both eyes turn inward. The condition can be constantly present, or occur intermittently, and can give the affected individual a "cross-eyed" appearance.

Exotropia: an outward of the eyes, may be intermittent or constant.

Hypermetropia (long-sightedness) is a common eye condition where nearby objects appear blurred, but vision is clear when looking at things further away.

Causes: The eye focus the light on the back of the retina of the eye, with long sight vision the light is focus behind the retina.

- One cause may be that eyeballs are shorter than usual (small eyes), a normal eye is usually around 23mm in the length, so an eye is Hypermetropic will be shorter than 23mm.
- Alternatively the cornea is flat (cornea should be curved to direct light onto the retina)

Both of these factor cause long-sightedness, as they cause light to travel past the retina. This results in blurring vision and this can be corrected by wearing convex glass (Jack, 2007; Gobin, 1994; Wilson, 1993; Raab, 1984 Ingram, 1991).

Hypermetropia in children: Hypermetropia is usually genetic. babies and young children may suffer from Hypermetropia, but this should eventually correct itself. This happens as the eyeballs lengthen as they grow. However, a lazy eye may develop as a result. This is because the eye with the weakest vision is ignored by the brain. If this is not corrected in young children, there is a risk that the weaker eye will never see as the other eye (amblyopic eye) (Fielder, 1996; Gobin, 1985; Vital-Durand, 1996; Abrahamsson et al., 1992; Ingram, 1994).

Patient & method: Children with squint age from 5 mothes to 5 years attending Ibn_AL_Hythem hospital department of squint between November 2017 to March 2018 where examine (mostly100 cases "45 male and 55 female") for their Ocular alignment, Binocular vision, Visual acuity by Cycloplegic refraction. All children in this study mostly 99% had refractive error (Hypermetropic 1.25 diopter to 8 diopter) with squint (Esotropia).

Ocular alignment: The deviation with and without glasses was measured by prism cover test in all cases and with the synoptophore where possible.

Binocular vision: Testing for binocular single vision and examined with the Frisbee and TNO tests as well as the synoptophore. Testing for suppression was conducted using the 20 dioptre base out prism test in all cases and with Bagolini lenses where cooperation was adequate.

Table 1. Patient according to the type of squint, Age and Gender

N	Age	Gender	Type of squint
1	5 years	Female	Exotropia
2	1 years	Male	Esotropia
3	2 years	Male	Esotropia
4	1 years	Female	Esotropia
5	1 years	Male	Esotropia
6	5 years	Male	Esotropia
7	4 years	Female	Esotropia
8	5 years	Male	Esotropia
9	3.5 years	Female	Esotropia
10	3 years	Female	Esotropia
11	5 years	Female	Esotropia
12	4 years	Female	Esotropia
13	4 years	Female	Esotropia
14	5 years	Male	Esotropia
15	8 months	Female	Esotropia
16	5 years	Female	Esotropia
17	9 months	Male	Esotropia
18	5 months	Male	Esotropia
19	8 months	Female	Esotropia
20	5 months	Male	Esotropia
21	9 months	Female	Esotropia
22	5 years	Female	Esotropia
23	3 years	Female	Esotropia
24	5 years	Female	Esotropia
25	6 months	Male	Esotropia
26	5 years	Female	Esotropia
27	7 months	Male	Esotropia
28	2 years	Male	Esotropia
29	2.5 years	Female	Esotropia
30	3 years	Female	Esotropia
31	4 years	Male	Esotropia
32	2.5 years	Male	Esotropia
33	5 years	Female	Esotropia
34	3 years	Female	Esotropia
35	3 years	Female	Esotropia
36	3 years	Female	Esotropia
37	1.5 years	Male	Esotropia
38	3 years	Male	Esotropia
39	10 months	Female	Esotropia
40	2.5 years	Male	Esotropia
41	3 years	Male	Esotropia
42	2 years	Male	Esotropia
43	1 years	Female	Esotropia
44	6 months	Male	Esotropia
45	4 years	Female	Esotropia
46	6 months	Female	Esotropia
47	3.5 years	Male	Esotropia
48	1 years	Male	Esotropia
49	4 years	Female	Esotropia
50	5 years	Male	Esotropia
51	3.5 years	Female	Esotropia
52	1 years	Female	Esotropia
53	3 years	Female	Esotropia
54	10 months	Female	Esotropia
55	8months	Female	Esotropia
56	10 months	Male	Esotropia
57	6 months	Female	Esotropia
58	2.5 years	Female	Esotropia
59	3 years	Male	Esotropia
60	4 years	Female	Esotropia
61	2.5 years	Female	Esotropia
62	5 years	Male	Esotropia
63	3 years	Female	Esotropia
64	3 years	Male	Esotropia
65	3 years	Male	Esotropia
66	1.5 years	Male	Esotropia
67	10 months	Female	Esotropia
68	2.5 years	Female	Esotropia
69	3 years	Female	Esotropia
70	2 years	Female	Esotropia
71	1 years	Male	Esotropia
72	2 years	Male	Esotropia
73	1.4 years	Female	Esotropia
74	3 years	Male	Esotropia
75	4 years	Male	Esotropia
76	2 years	Female	Esotropia
77	5 years	Male	Esotropia

78	4 years	Female	Esotropia
79	2 years	Male	Esotropia
80	3.5 years	Male	Esotropia
81	7 months	Female	Esotropia
82	5 years	Female	Esotropia
83	1 years	Male	Esotropia
84	2 years	Female	Esotropia
85	1 years	Male	Esotropia
86	1 years	Female	Esotropia
87	5 years	Female	Esotropia
88	4 years	Male	Esotropia
89	5 years	Female	Esotropia
90	3.5 years	Female	Esotropia
91	3 years	Male	Esotropia
92	5 years	Male	Esotropia
93	4 years	Female	Esotropia
94	4 years	Female	Esotropia
95	5 years	Female	Esotropia
96	8 months	male	Esotropia
97	5 years	Male	Esotropia
98	9 months	Female	Esotropia
99	7 months	Female	Esotropia
100	5 years	Male	Esotropia

26	5 years	Female	Esotropia	Hypermetropia +4 D
27	7 months	Male	Esotropia	Hypermetropia +3 D
28	2 years	Male	Esotropia	Hypermetropia +6 D
29	2.5 years	Female	Esotropia	Hypermetropia +3.5 D
30	3 years	Female	Esotropia	Hypermetropia +8 D
31	4 years	Male	Esotropia	Hypermetropia +2D
32	2.5 years	Male	Esotropia	Hypermetropia +3.5 D
33	5 years	Female	Esotropia	Hypermetropia +4 D
34	3 years	Female	Esotropia	Hypermetropia +4 D
35	3 years	Female	Esotropia	Hypermetropia +3 D
36	3 years	Female	Esotropia	Hypermetropia +8 D
37	1.5 years	Male	Esotropia	Hypermetropia +3D
38	3 years	Male	Esotropia	Hypermetropia +4 D
39	10 months	Female	Esotropia	Hypermetropia +2.5 D
40	2.5 years	Male	Esotropia	Hypermetropia +2.5 D
41	3 years	Male	Esotropia	Hypermetropia +3 D
42	2 years	Male	Esotropia	Hypermetropia +5.5 D
43	1 years	Female	Esotropia	Hypermetropia +5 D
44	6 months	Male	Esotropia	Hypermetropia +7 D
45	4 years	Female	Esotropia	Hypermetropia +3.5 D
46	6 months	Female	Esotropia	Hypermetropia +3D
47	3.5 years	Male	Esotropia	Hypermetropia +9 D
48	1 years	Male	Esotropia	Hypermetropia +4.5 D
49	4 years	Female	Esotropia	Hypermetropia +6.5 D
50	5 years	Male	Esotropia	Hypermetropia +4.5 D
51	3.5 years	Female	Esotropia	Hypermetropia +4D
52	1 years	Female	Esotropia	Hypermetropia +3 D
53	3 years	Female	Esotropia	Hypermetropia +3 D
54	10 months	Female	Esotropia	Hypermetropia +2 D
55	8months	Female	Esotropia	Hypermetropia +7.5 D
56	10 months	Male	Esotropia	Hypermetropia +3.5 D
57	6 months	Female	Esotropia	Hypermetropia +4.5 D
58	2.5 years	Female	Esotropia	Hypermetropia +3.5 D
59	3 years	Male	Esotropia	Hypermetropia +5 D
60	4 years	Female	Esotropia	Hypermetropia +3.5 D
61	2.5 years	Female	Esotropia	Hypermetropia +5 D
62	5 years	Male	Esotropia	Hypermetropia +7 D
63	3 years	Female	Esotropia	Hypermetropia +2 D
64	3 years	Male	Esotropia	Hypermetropia +6 D
65	3 years	Male	Esotropia	Hypermetropia +4.5 D
66	1.5 years	Male	Esotropia	Hypermetropia +6D
67	10 months	Female	Esotropia	Hypermetropia +6 D
68	2.5 years	Female	Esotropia	Hypermetropia +1.5 D
69	3 years	Female	Esotropia	Hypermetropia +1.5 D
70	2 years	Female	Esotropia	Hypermetropia +3.5D
71	1 years	Male	Esotropia	Hypermetropia +4 D
72	2 years	Male	Esotropia	Hypermetropia +3 D
73	1.4 years	Female	Esotropia	Hypermetropia +5D
74	3 years	Male	Esotropia	Hypermetropia +4 D
75	4 years	Male	Esotropia	Hypermetropia +1.5 D
76	2 years	Female	Esotropia	Hypermetropia +2.5D
77	5 years	Male	Esotropia	Hypermetropia +7 D
78	4 years	Female	Esotropia	Hypermetropia +2 D
79	2 years	Male	Esotropia	Hypermetropia +2 D
80	3.5 years	Male	Esotropia	Hypermetropia+5.5 D
81	7 months	Female	Esotropia	Hypermetropia +5 D
82	5 years	Female	Esotropia	Hypermetropia +2.5 D
83	1 years	Male	Esotropia	Hypermetropia +4 D
84	2 years	Female	Esotropia	Hypermetropia +1.5 D
85	1 years	Male	Esotropia	Hypermetropia +8 D
86	1 years	Female	Esotropia	Hypermetropia +3 D
87	5 years	Female	Esotropia	Hypermetropia +1.25 D
88	4 years	Male	Esotropia	Hypermetropia +2.5 D
89	5 years	Female	Esotropia	Hypermetropia +3 D
90	3.5 years	Female	Esotropia	Hypermetropia +8 D
91	3 years	Male	Esotropia	Hypermetropia +4.5 D
92	5 years	Male	Esotropia	Hypermetropia +6.5 D
93	4 years	Female	Esotropia	Hypermetropia + 4.5 D
94	4 years	Female	Esotropia	Hypermetropia +4 D
95	5 years	Female	Esotropia	Hypermetropia +3 D
96	8 months	male	Esotropia	Hypermetropia +3 D
97	5 years	Male	Esotropia	Hypermetropia+2D
98	9 months	Female	Esotropia	Hypermetropia +7.5 D
99	7 months	Female	Esotropia	Hypermetropia +3.5 D
100	5 years	Male	Esotropia	Hypermetropia +4.5 D

Visual acuity: Best corrected visual acuity was measured using the Snellen chart where possible. A record was made of the number of amblyopic eyes, an interocular difference of two or more Snellen lines or equivalent.

Cycloplegic refraction: All children attending the department undergo cycloplegic refraction at least once a year. We prescribe the full cycloplegic correction (corrected for working distance). Refraction was repeated at the most recent clinic visit and the fundus examined.

RESULTS

In this study among 100 cases (45 male and 55 female) of children age from 5 months to 5 years which we select from the department of squint in Ibn_AL_Hythem hospital. We found that 99% of these cases had Esotropia 1% had Exotropia and when we examine their refractive error we found that 99% of these children had Hypermetropia.

Table 2. Patients according to the, Age, Gender, type of squint and type and degree of refractive error

N	Age	Gender	Type of squint	type and degree of refractive error. Diopter (D)
1	5 years	Female	Exotropia	Myopia +4D
2	1 years	Male	Esotropia	Hypermetropia +1.25 D
3	2 years	Male	Esotropia	Hypermetropia +2.5 D
4	1 years	Female	Esotropia	Hypermetropia +3 D
5	1 years	Male	Esotropia	Hypermetropia +8 D
6	5 years	Male	Esotropia	Hypermetropia +4.5 D
7	4 years	Female	Esotropia	Hypermetropia +6.5 D
8	5 years	Male	Esotropia	Hypermetropia + 4.5 D
9	3.5 years	Female	Esotropia	Hypermetropia +4 D
10	3 years	Female	Esotropia	Hypermetropia +3 D
11	5 years	Female	Esotropia	Hypermetropia +3 D
12	4 years	Female	Esotropia	Hypermetropia+2 D
13	4 years	Female	Esotropia	Hypermetropia +7.5 D
14	5 years	Male	Esotropia	Hypermetropia +3.5 D
15	8 months	Female	Esotropia	Hypermetropia +4.5 D
16	5 years	Female	Esotropia	Hypermetropia +8 D
17	9 months	Male	Esotropia	Hypermetropia +2.5 D
18	5 months	Male	Esotropia	Hypermetropia +7 D
19	8 months	Female	Esotropia	Hypermetropia +3 D
20	5 months	Male	Esotropia	Hypermetropia +5D
21	9 months	Female	Esotropia	Hypermetropia +5.5 D
22	5 years	Female	Esotropia	Hypermetropia +6.5 D
23	3 years	Female	Esotropia	Hypermetropia +6 D
24	5 years	Female	Esotropia	Hypermetropia +3 D
25	6 months	Male	Esotropia	Hypermetropia +2 D

DISCUSSION

The present study used 100 cases of children 5 months to 5 years of age to identify the association between refractive error

mainly Hypermetropia and childhood esotropia and exotropia. The major potentially risky refractive errors for esotropia were Hypermetropia of 1.25 to 8 D or more as Hypermetropia in children. Is usually genetic (Brown, 1938; Slataper, 1950; Mantyjarvi, 1985). Babies and young children may suffer from Hypermetropia, but this should eventually correct itself. This happens as the eyeballs lengthen as they grow. However, a lazy eye may develop as a result. This is because the eye with the weakest vision is ignored by the brain. If this is not corrected in young children, there is a risk that the weaker eye will never see as the other eye, where is squint happen (Dobson, 1986 and Repka, 1989).

Conclusion

- Hypermetropia is usually genetic. young children may suffer from it, but eventually it's correct itself. When they grow up, but when the treatment is neglected (not use glass) this lead to Anisometropia, this lead to developed Ampylopia and end with squinting eye.
- Yang children with Hypermetropia need to be treated by using the correct eye glasses to prevent Ampylopia and squint, because there is a strong correlation between squint and Hypermetropia.

Recommendation

- In future study we can collect more cases of other deferent ages.
- In future study we can collect cases from other departments of squint in other hospitals to compare the results.
- In future study we can collect cases of accommodative Esotropia and non accommodative Esotropia to show it's correlation with Hypermetropia.
- In future study we can collect cases with Exotropia to show it's correlation with Myopia.

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