

RESULTS.

Results

Age and sex distribution:

Patient groups:

The age of our cases ranged between 3 and 12 years. The average age was 6 years and 2 months.

Twenty five patients were males (52%) and twenty three were females (48%).

Control group:

The age of the children in the control group ranged between 4 and 12 years the mean average age was 7 years and half.

Three children were females 30% and 7 children were males 70%.

Incidence of sore throat:

All our patients had recurrent attacks of sore throat.

The mean frequency of attacks was 4 attacks in the last 6 months before adenotonsillectomy.

Incidence of bronchial asthma:

All the allergic children suffered from attacks of asthma with cough, wheezes and dyspnea.

The mean frequency of asthmatic attacks was 6 attacks in the last 6 months before the operation.

Incidence of allergic rhinitis:

Five children (23.8%) out of the twenty-one asthmatic children suffered from symptoms of allergic rhinitis: paroxysmal attacks of rhinorrhea, sneezing, lacrimation nasal obstruction and itching of nose.

Incidence of adenoid enlargement:

Six children (12.5%) out of the forty eight children had had adenoid enlargement.

Incidence of the precipitating factor to the asthmatic attacks:

- * Three cases (14%) related their asthmatic attacks to dust exposure.
- * Two cases (9%) related their asthmatic attacks to insecticides exposure.
- * Eight cases (38%) experienced their asthmatic attacks after common cold and acute tonsillitis.
- * The remainder cases could not relate their attacks to any offending factor.

Incidence of positive family history among asthmatic children:

Three cases (14.2%) out of the twenty one asthmatic children gave a positive family history of asthma.

Results of E.N.T. examination

Throat:

All patients showed signs of chronic tonsillitis in a variable degrees such as

- * hypertrophic enlarged tonsils
- * congested anterior pillars
- * irregularity of surface of the tonsils
- * oozing pus or debris from the mouth of crypts on squeezing the tonsils
- * cervical lymphadenopathy

Nose:

Three cases (6.25%) out of the forty eight children showed signs of chronic sinusitis with mucopurulent discharge filling the nasal floor and congested nasal mucosa.

The five allergic cases who were complaining from symptoms of allergic rhinitis showed pale-oidematous mucosa-bluish in colour, swollen inferior turbinates which may completely occlude the nasal cavity.

Ear: (otoscopic examination)

Four cases (8.3%) out of the total forty eight patients showed signs of chronic suppurative otitis media.

Five cases (10.4%) showed signs of secretory otitis media.

Results of stool analysis

Children showed parasitic infestations were excluded from the study.

Results of erythrocyte sedimentation rate (E.S.R.)

The pre-operative determination showed that the first hour ranged between 8 and 28 with a mean of 16 and second hour ranged between 20 and 40 with a mean of 30 the post-operative determination showed that the first hour ranged between 6 and 18 with a mean of 10 and the second hour ranged between 12 and 30 with a mean of 18 this can be shown in table 1.

Table (1): Shows E.S.R. before and after tonsillectomy.

E.S.R.	<u>1st.</u> hour	<u>2nd.</u> hour
Range	8 - 28	20 - 40
Pre- mean	16	30
Range	6 - 18	12 - 30
Post- mean	10	18

From this table it can be seen that the mean E.S.R. dropped after tonsillectomy operation.

Results of Immunoglobulins estimations

IgA immunoglobulin: [Table no. 2]

1- Control group:

The IgA serum level in the control group ranged between 120-230 mg/100 ml with a mean of 173.5 ± 14.40 mg/100 ml.

2- Allergic group:

The preoperative serum IgA level ranged from 78-250 mg/100 ml with a mean of 124.5 ± 12.5 mg/100 ml. the post operative serum IgA level ranged from 80-300 mg/100 ml with a mean of 122.7 ± 13 mg/100 ml.

The non-allergic group:

The pre-operative serum IgA level ranged from 75-320 mg/100 ml with a mean of 135.6 ± 12.7 mg/100 ml.

The post-operative serum IgA level ranged between 85-240 mg/100 ml with a mean of 138.8 ± 8.77 mg/100 ml.

Statistical analysis showed

1- Significant lower per-operative serum IgA in both allergic ($t = -11.34$ $p < 0.01$) and non allergic group ($t = -7.47$ $p < 0.01$) as compared with the control level.

2- Insignificant change in the serum IgA level after the operation from its level before tonsillectomy in both allergic ($t = 0.6$) and non-allergic groups ($t = 1.0$).

3- The post operative serum IgA level were still lower significantly than the control level in the allergic ($t = -11.46$) and non allergic group ($t = -8.52$).

Table (2): Shows the results of IgA estimation.

IgA		Range	Mean \pm S.D.	Unit	Total no. cases
Allergic group	Pre-	78 - 250	124.5 \pm 12.50	mg/100ml	21
	Post-	80 - 300	122.7 \pm 13.00	"	
Non allergic	Pre-	75 - 320	135.6 \pm 12.70	"	27
	Post-	85 - 240	138.8 \pm 8.77	"	
Control		120 - 230	173.5 \pm 14.40	"	10

IgG Immunoglobulin: [Table 3]

Control group:

The IgG serum level in control group ranged between

Allergic group:

- * The pre-operative serum IgG level ranged between 850-3200 mg/100 ml with a mean of 2086 ± 175.13 mg/100 ml.
- * The post operative serum IgG level ranged between 780-2500 with a mean of 1300 ± 99.8 mg/100 ml.

Non allergic group:

The pre-operative serum IgG level ranged between

860-3200 mg/100 ml with a mean of 1857.2 ± 147.3 mg/100 ml.

- * The post-operative serum IgG level ranged bet. 780-2200 mg/100 ml with a mean of 1303 ± 63.3 mg/100 ml.

Statistical analysis showed the following:

- 1- Significant high pre-operative serum IgG level in both allergic ($t = 31.16$ $P < 0.01$) and non-allergic group ($t = 11.55$ $P < 0.01$).
- 2- The post-operative serum IgG level dropped significantly after the operation in both allergic ($t = 17.73$ $P < 0.01$) and non allergic group ($t = 17.13$ $P < 0.01$).
- 3- The post-operative serum IgG level did not change significantly from the normal control level in the allergic ($t = 1.88$) and non-allergic group ($t = 1.82$)

Table (3): Shows the results of IgG estimation.

IgG		Range	Mean \pm S.D.	Unit	Total no. cases
Allergic group	Pre-	850-3200	2086 \pm 175.13	mg/100ml	21
	Post-	780-2500	1300 \pm 99.80	"	
Non allergic	Pre-	860-3200	1857 \pm 147.30	"	27
	Post-	780-2200	1303 \pm 63.30	"	
Control		830-1990	1248 \pm 112.20	"	10

IgE immunoglobulin: [Table 4]:

Control group:

The serum IgE level in the control group ranged between 860-1220 Iu/ml. with a mean of 940 \pm 32.07 Iu/ml.

Allergic group

The pre-operative serum IgE level ranged between 850-1450 Iu/ml. with a mean of 1112 \pm 44.6 Iu/ml.

The post operative serum IgE level ranged from 870-1440 Iu/ml. with a mean of 1080 \pm 36.07 Iu/ml.

Non allergic group

* The pre-operative serum IgE level ranged between 640-1400 Iu/ml. with a mean of 915 ± 37.9 .

* The post operative serum IgE level ranged between 650-1360 Iu/ml. with a mean value of 932 ± 40.76 Iu/ml.

Statistical analysis showed

- 1- Significant high pre-operative serum IgE level in the allergic group as compared to the control group ($t = 12.85, P < 0.01$).
- 2- The serum IgE level dropped significantly after tonsillectomy in the allergic group as compared with the pre-operative level ($t = 3.6, P < 0.01$). But still higher significantly as compared with the control group ($t = 12.31 P < 0.01$).
- 3- The serum IgE level in the non-allergic group did not differ significantly either pre-operatively ($t = -1.80$) or post-operatively ($t = 0.49$) as compared with the control group and the post operative level did not change significantly from the pre-operative level ($t = 1.6$).

Table (4): Shows the results of IgE estimation.

IgE		Range	Mean \pm S.D.	Unit	Total no. cases
Allergic group	Pre-	850-1450	1112 \pm 44.60	mg/100ml	21
	Post-	870-1440	1080 \pm 36.07	"	
Non allergic	Pre-	640-1400	915 \pm 37.90	"	27
	Post-	650-1360	932 \pm 40.76	"	
Control		860-1220	940 \pm 32.07	"	10

Eosino^dphilic count estimation:

Control group

The eosinophilic count in the control group ranged between 0-250/cmm. with a mean of 111.1 ± 21.7 .

Allergic group

* The pre-operative eosinophilic count ranged between 0-1600/cmm. with a mean of 464.7 ± 108.1 /cmm.

* The post operative eosinophilic count ranged between 0-1300/cmm. with a mean of 417.8 ± 83.75 .

Non allergic group:

* The pre-operative eosinophilic count ranged between 0-450 /cmm. with a mean of 102.7 ± 22.8 .

* The post operative count ranged between 0-410/cmm. with a mean of 109 ± 18.56 .

Statistical analysis showed

1- Significant high eosinophilic count in the allergic patients either pre-operatively ($t = 12.92$, $P < 0.01$) or post operatively ($t = 12.32$, $P < 0.01$) as compared with the control count.

2- The eosinophilic count in the non-allergic group did not differ significantly from the control count either preoperatively ($t = 0.73$) or post-operatively ($t = 0.28$).

3- The post operative eosinophilic count did not change significantly from the pre-operative count in both allergic ($t = 1.36$) and non-allergic group ($t = 1.23$).

Table (5): Shows the results of eosinophilic count.

Eosinophilic in blood		Range	Mean \pm S.D.	Unit	Total no. cases
Allergic group	Pre-	0 - 1600	464.7 ± 108.1	esino./cmm	21
	Post-	0 - 1300	417.8 ± 83.75	"	
Non	Pre-	0 - 450	102.1 ± 22.80	"	27
	Post-	0 - 410	109.0 ± 18.56	"	

Results of B Lymphocytes determination in the peripheral blood (table (6)).

1- Control group.

The B. lymphocytes percentage ranged between 18-35% with a mean of 25.3 ± 2.12 %.

2- Allergic group:

The pre-operative B.lymphocytes % ranged between 17 and 42% with a mean of 26.14 ± 1.64 %.

The post-operative B lymphocytes % ranged between 17-42 % with a mean of 25.5 ± 1.6 %.

3- The Non allergic group.

The pre-operative B.Lymphocytes % ranged between 18 and 54% with a mean of 34.1 ± 1.77 %.

the post-operative B.lymphocytes% ranged between 15-42% with a mean of 26 ± 1.4 %.

Statistical analysis showed:

1- Insignificant changes in the B lymphocytes % either pre-operatively ($T = 1.42$), or post-operatively ($T = -0.8$), as compared with the control % in the allergic group also the post-operative % did not change significantly from the pre-operative % ($T = 1.77$).

2- Significant high pre-operative B.lymphocyte % ($T = 12.05$ $P = < 0.01$), as compared with the control in the non allergic group and this high B.lymphocytes % dropped significantly after tonsillectomy ($T = 2.32$), but the post-operative % did not differ significantly from the control % ($T = 1.12$).

Table (6): Shows the results of B-lymphocytes % estimation.

B-lymphocyte %	Range	Mean \pm S.D.	Unit	Total no. cases
Allergic Pre-	17 - 42	26.14 \pm 1.64	%	21
group Post-	17 - 42	25.50 \pm 1.60	"	
Non Pre-	18 - 54	34.10 \pm 1.77	"	27
allergic Post-	15 - 42	26.00 \pm 1.40	"	
Control	18 - 35	25.30 \pm 2.12	"	10

Results of T lymphocytes determination in the peripheral blood Table (7):

1- The Control Group:

The T lymphocytes percentage of the control group ranged between 35 and 70% with a mean of 54.6 ± 3.38 %

2- The Allergic Group:

The pre-operative T lymphocyte % ranged between 25 and 62% with a mean of $41.1 \pm 2.33\%$.

The post operative T.lymphocytes % ranged between 25 and 70% with a mean of $42 \pm 2.5\%$.

3- The non allergic group:

The pre-operative T lymphocyte % ranged between 29-73% with a mean of $52.5 \pm 2.65\%$.

The post-operative T lymphocytes % ranged between 36-76% with a mean of $53 \pm 2.31\%$.

Statistical Analysis showed:

1- As regard the allergic group. there was significant decrease in the pre-operative ($T = -15.34$ $P = < 0.01$), and post-operative T lymphocyte % ($T = -17.28$ $P = < 0.01$), as compared with the control percentage and there was no significant difference between the pre-and post-operative. T lymphocyte % ($t = 1.70$).

2- As regard the non allergic group:

The pre-operative ($T = .1.92$), and post-operative T lymphocyte % ($T = 1.59$), did not differ significantly

Table (7): Shows the results of T-lymphocytes % estimation.

T-lymphocyte %		Range	Mean \pm S.D.	Unit	Total no. cases
Allergic group	Pre-	25 - 62	41.1 \pm 2.33	%	21
	Post-	25 - 70	42.0 \pm 2.50	"	
Non	Pre-	29 - 73	52.5 \pm 2.65	"	
allergic	Post-	36 - 76	53.0 \pm 2.31	"	
Control		35 - 70	54.6 \pm 3.38	"	10

Results of skin allergic tests (table 8),

1- As Regard the Allergic Group:

Sixteen cases (76%), out of the twenty one allergic patient caused pre-operative positive skin tests.

Out of those 16 cases .

Seven cases (43.75%), were found to be reactive to one allergen while the rest 9 cases (56.25%), were found to be reactive to multiple allergens .

Ten cases (62.5%), caused skin sensitivity to house

One case no. 14 with positive skin test to grass pollen became negative after the operation.

One case no. 16 with positive skin test to house dust became negative after tonsillectomy.

Two cases no. 4 & 20 with positive skin tests to house dust mite became negative after the operation .

As Regards the Non Allergic Group.

Only four cases (14.8%), out of the twenty seven non-allergic patients caused pre-operative positive skin test to house dust. After tonsillectomy there was no change.

None of the non allergic patients with pre-operative negative skin test got positive skin test after tonsillectomy.

Table (9): Shows the percentage of sensitivity to different allergens.

Allergen	Cases with positive skin test
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House dust	10 cases (62.5%)
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House dust mite	6 cases (37.5%)
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Moulds	4 cases (25.0%)
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Grass pollens	4 cases (25.0%)
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le (8): Shows allergic cases with positive skin test
and their correlation with serum IgE level.

Case No.	Pre-operative serum IgE	House dust		House dust mite		Moulds		Grass pollens		Feather	
		pre-	post-	pre-	post-	pre-	post-	pre-	post-	pre-	post-
1	1450	+	+	+	+						
2	1340	+	+					+	+		
3	930										
4	1250	+	+	+	-ve						
(5)	1320	+	+								
6	900										
7	1450	+	+	+	+						
(8)	1130					+	+				
9	850	+	+					+	+		
(10)	1360	+	+								
11	1280										
(12)	780	+	+								
13	1120										
(14)	1200							+	-ve		
15	920			+	+	+	+				
16	1070	+	-ve					+	+		
17	880										
(18)	1150					+	+				
19	1000			+	+	+	+				
20	960	+	+	+	-ve						
(21)	1020									+	+

N.B.:

* Cases with positive skin reaction (16 cases).

() Cases between brackets have positive skin test to one allergen.

Twelve cases with positive skin reaction have high serum IgE

Results of clinical follow up after tonsillectomy operation.

Incidence of attacks of sore throat. (Table 10):

The mean frequency of attacks of sore throat was 1.5 attacks in the post-operative 6 months of follow up.

Incidence of Asthmatic Attacks in the Allergic Group:

The mean frequency of asthmatic attacks was 5 attacks

in the postoperative 6 months of follow up. (Table 11).

Three asthmatic cases (no. 7,16,19), (14.2%) out of the twenty one allergic children got no asthmatic attacks in the post operative 6 months of follow up.

One patient (20%), out of the 5 patient^{no. 5}_x with mixed diseases (rhinitis and asthma), gained marked improvement concerning only the nose troubles but still was complaining from asthmatic attacks.

Table (10): Shows the frequency of attacks of sore throat
and sex distribution of our patients.

Serial no.	Sex	Frequency of sore throat attacks/ 6 months		Serial no.	Sex	Frequency of sore throat attacks/ 6 months	
		Pre-op.	Post-op.			Pre-op.	Post-op.
1	M	4	1	25	M	4	1
2	M	3	0	26	F	4	3
3	F	4	2	27	F	6	3
4	F	3	0	28	M	3	1
5	M	5	1	29	F	4	5
6	M	6	3	30	M	4	0
7	F	4	1	31	F	5	2
8	M	3	2	32	M	3	3
9	F	4	5	33	M	3	2
10	M	4	0	34	M	3	1
11	M	5	0	35	M	4	0
12	F	3	1	36	F	6	4
13	M	3	1	37	M	5	3
14	F	5	3	38	M	6	2
15	M	4	1	39	F	3	3
16	F	5	3	40	M	3	1
17	F	4	0	41	F	4	2
18	F	3	0	42	M	4	2
19	M	3	0	43	M	6	0
20	F	3	1	44	F	3	1
21	F	4	2	45	F	3	0
22	M	3	1	46	M	6	2
23	M	3	0	47	F	4	1
24	F	5	0	48	F	3	3

Mean frequency of attacks
pre-operative

4 attacks/6 months

Mean frequency of attacks
post-operative.

1.5 attacks/6 months

Table (11): Shows frequency of asthmatic attacks/ 6 months before and after tonsillectomy.

Serial no.	Before tonsillectomy	After tonsillectomy
1	6	5
2	7	6
3	6	7
4	4	5
5	5	5
6	6	6
7	3	0
8	6	6
9	7	6
10	6	6
11	7	7
12	8	6
13	7	7
14	6	5
15	8	8
16	4	0
17	5	6
18	6	5
19	6	0
20	7	6
21	6	3
Mean frequency	6	5 attacks /

Table (12): Allergic group.

IgE			IgA			IgG			Eosinophil count			B-lymphocyte			T-lymphocyte		
pre-	post-	control	pre-	post-	control	pre-	post-	control	pre-	post-	control	pre-	post-	control	pre-	post-	control
50	1050	935	98	120	160	1820	1020	830	1240	1300	175	32	20	35	34	50	35
40	1120	1220	113	98	230	2230	1230	1315	1360	460	120	32	26	20	52	42	42
30	1040	940	85	106	145	1590	1730	850	720	330	0	20	32	22	46	25	58
50	920	860	250	230	125	850	1250	1200	1020	230	85	17	18	35	35	62	50
20	1440	920	108	90	135	3200	1080	940	480	60	60	18	34	30	50	48	56
00	980	885	97	90	150	3400	2500	1110	1600	850	0	21	27	25	42	33	55
50	1250	910	78	95	230	2120	1600	1250	50	1160	250	42	18	18	25	53	60
30	1340	930	85	105	210	1600	1200	1990	100	40	80	26	26	30	62	43	52
50	1060	900	105	90	120	1320	1120	1500	160	70	140	25	22	20	43	25	68
60	850	900	110	85	230	2250	780	1500	70	0	200	17	26	18	28	36	70
80	1340		210	300		2300	1120		600	520		19	34		33	43	
80	900		95	80		1860	1230		30	160		27	42		53	53	
20	1060		104	85		2420	1340		250	980		23	22		43	70	
00	1300		95	120		3100	1500		320	260		26	21		36	54	
20	1020		87	95		975	1050		800	300		41	18		25	38	
70	900		112	250		1020	950		130	510		36	20		36	52	
880	970		90	103		2420	1236		0	0		20	17		28	28	
150	1120		240	110		2560	1600		650	930		26	20		45	43	
000	1050		250	125		1050	1210		730	860		18	23		38	47	
960	1120		98	116		1950	1320		250	140		20	34		56	34	
020	870		105	85		2780	1250		0	165		23	35		54	43	
112	1080	940	124.5	122.7	173.5	2086	1300	1248	464.7	417.8	111.1	26.14	25.5	25.30	41.10	42	54.6
4.6	36.07	32.07	12.5	13.0	14.4	175.1	99.8	112.2	108.1	83.7	21.7	1.04	1.6	2.12	2.33	2.5	3.38

Table (13): Non Allergic Group

Ser. no.	IgE			IgA			IgG			Eosinophil count			B-lymphocyte			T-lymphocyte		
	pre-	post-	control	pre-	post-	control	pre-	post-	control	pre-	post-	control	pre-	post-	control	pre-	post-	control
1	850	920	935	113	105	160	1730	1250	830	30	10	175	36	34	35	46	37	35
2	730	650	1220	105	130	230	1200	1000	1315	65	75	120	42	22	20	57	57	42
3	920	1350	940	117	95	145	1500	1210	850	0	0	0	29	20	22	63	72	58
4	980	820	860	99	112	120	2300	1600	1200	24	56	85	21	22	35	38	45	50
5	736	780	920	178	85	125	1120	860	940	75	130	60	18	42	30	46	40	56
6	1230	1020	885	113	130	135	2600	1500	1110	412	140	0	40	36	25	55	38	55
7	950	830	910	105	175	150	2120	1300	1500	55	75	250	26	30	18	71	68	60
8	800	670	930	97	210	230	980	1230	1250	135	320	80	54	32	30	62	56	52
9	850	950	900	100	116	210	2300	1050	1990	0	30	140	39	25	20	44	48	52
10	840	830	900	106	85	230	1850	1230	1500	26	60	200	42	27	18	52	68	68
11	940	900		90	98		975	1030		56	50		38	21		72	46	70
12	750	1200		83	152		1400	1500		80	110		21	28		36	42	
13	1400	1260		115	101		1620	850		102	56		28	23		43	36	
14	770	820		235	135		2460	940		220	75		25	41		34	59	
15	830	710		96	120		3100	1200		85	103		36	35		56	42	
16	850	740		220	125		1050	1600		170	65		34	20		32	70	
17	1320	1100		247	206		900	780		23	120		39	33		29	56	
18	960	908		102	130		3200	1600		0	30		23	22		66	72	
19	820	1360		75	86		3600	2200		140	100		54	20		70	64	
20	640	730		216	203		2200	1560		70	50		33	23		50	60	
21	1020	740		102	126		1620	920		95	100		41	16		66	48	
22	950	1040		95	114		1530	1100		450	130		27	20		73	36	
23	860	750		80	210		2100	1200		58	200		35	17		53	69	
24	780	730		86	240		2600	1200		0	60		25	15		45	76	
25	870	920		320	186		930	980		320	410		44	23		56	57	
26	1200	930		108	85		2300	1700		105	60		36	26		73	38	
27	850	1330		260	180		860	1200		34	300		34	30		38	43	
Mean	915	932.1	940	135.6	138.8	173.5	1857	1303	1248	102.7	109	111.1	34.1	26	25.3	52.5	53	54.6
+S.D.	37.9	40.76	32.07	12.7	8.77	14.4	63.3	147.3	112.2	22.8	18.56	21.7	1.77	1.4	2.12	2.65	2.31	3.38