RESUMES

RESULTS

Study Group:

A) Data from the history of the patients:

1) Past history of acute otitis media:

The frequency of prior episodes of A.O.M. among the patients of the present study is shown in table (1) prior to the present attack 40 patients (31%) had had several(≥ 3) episodes, whereas 34 patients (26%) reported that they suffered from the disease for the first time (graph 1 & 2).

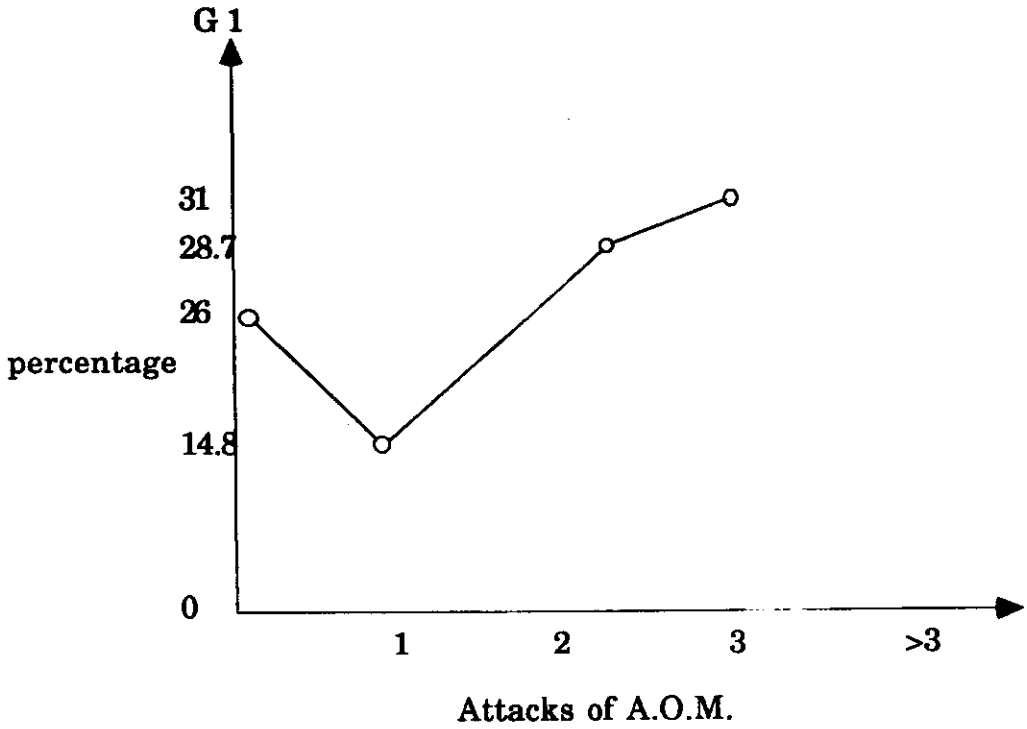
2. History of upper respiratory tract infection:

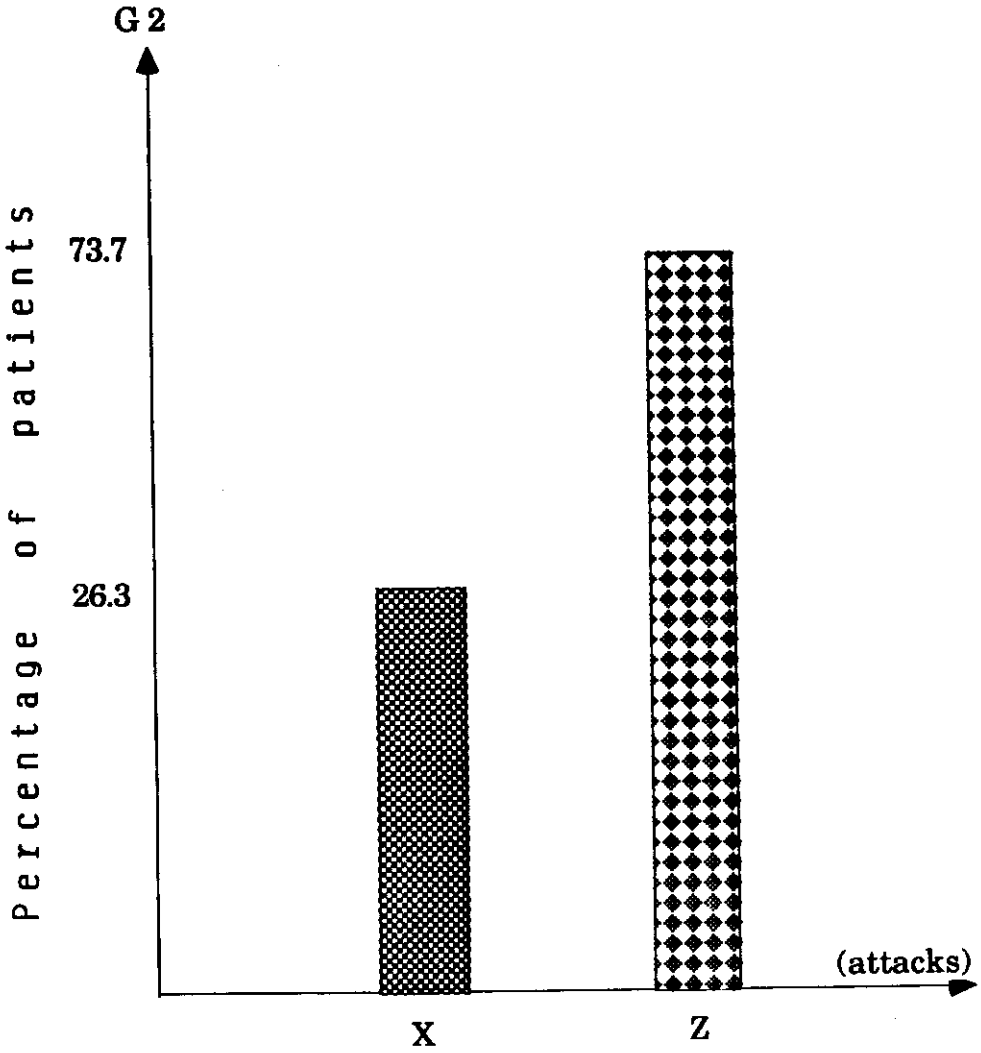
A large number of patients had had repeated U.R.T.Is during the 6 months before the present attack of A.O.M. (Table 2). The number of patients presenting with A.O.M. associted with U.R.T.I. are 85/129 patients (66%) (Graph 3 & 4).

Table (1): Prior episodes of A.O.M. in 129 patients

No. of otitis episodes	No. of patients	Percentage %
0	34	26.3
1	18	14.0
2-3	37	28.7
3 for more	40	31
	129	10

G1 & G2

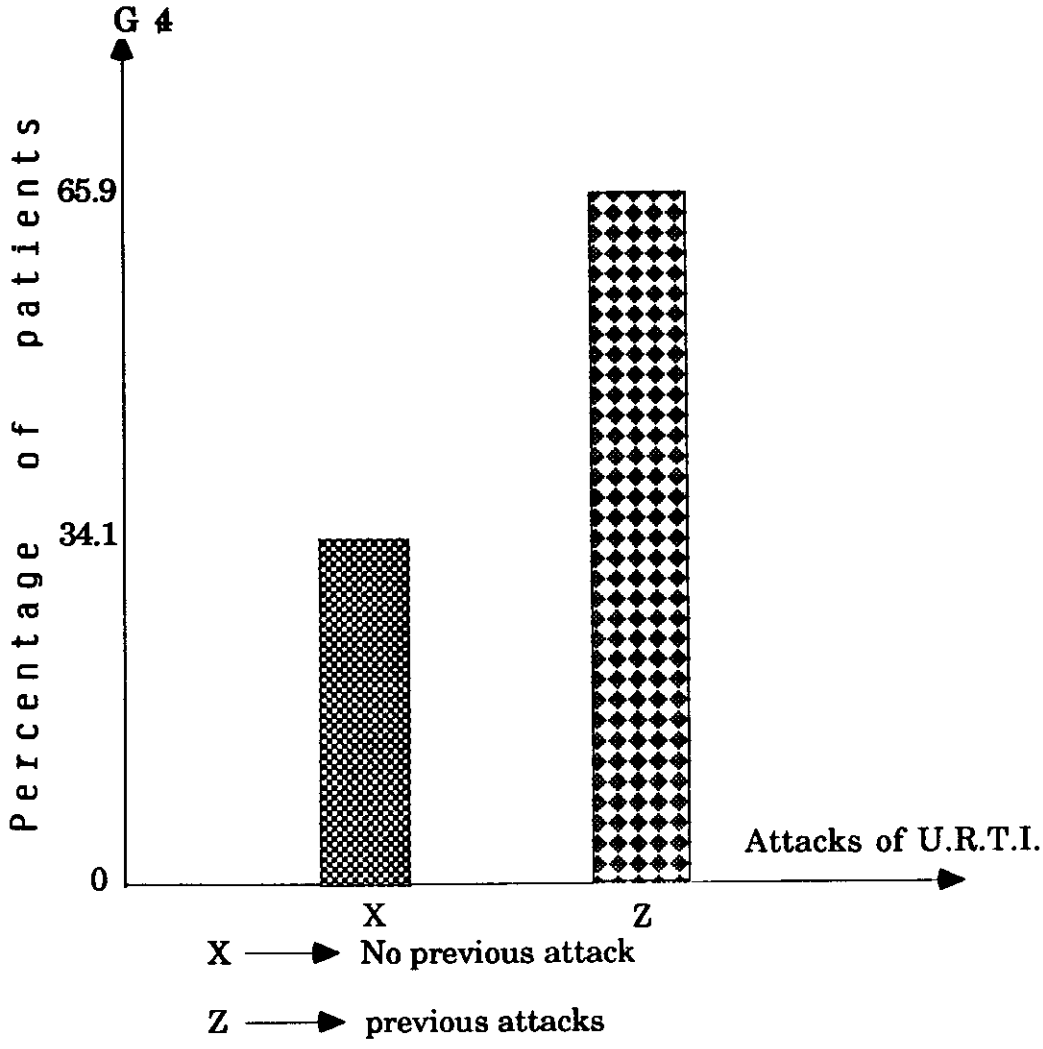

G 1
31
28.7
26
percentage
14.8
0
1
2
3
>3
Attacks of A.O.M.

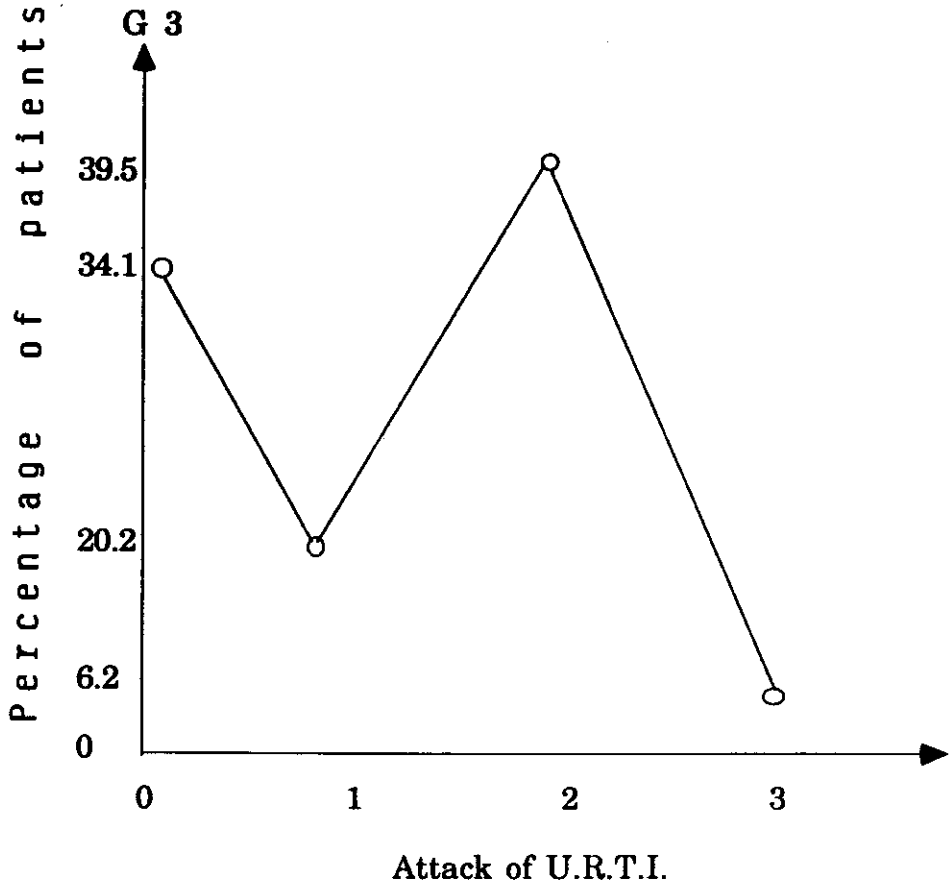


X ⟶ no previous attacks of A.O.M.
Z ⟶ Previous attacks of A.O.M.

Table (2): Frequency of U.R.T.Js during the past 6 months in 129 patients

No. of infections (U.R.T.Is)	No. of patients	Percentage %
0	44	34.1
1	26	20.2
2	51	39.5
3 for more	8	6.2
	129	100


G 4
Percentage of patients
65.9
34.1
0
X
Z
Attacks of U.R.T.I.
X ⟶ No previous attack
Z ⟶ previous attacks


G 3
Percentage of patients
39.5
34.1
20.2
6.2
0
0
1
2
3
Attack of U.R.T.I.

3. *Relationship between susceptibility to infection and otitis media episodes:*

However, acute otitis media occurs as a sequalae of upper respiratory tract infection (85 patients: 66%), also susceptibility to U.R.T.I. is related to frequency of prior otitis media episodes. There was an almost significant association between the number of A.O.M. episodes and the occurrence of U.R.T.I.

Among the patients with 3 U.R.T.Is during (the period from November to May) half of them 4/8 patients had had three or more acute otitis media episodes.

4. *History of allergy:*

In the present study a total of 27 patients (27/129: 21%) have reported a history of allergy (Table 3), nasal allergy alone occurred in 11 patients (8.5% of the total patients).

The patients with a history of allergy did not differ significantly from non allergic patients in regard to prior otitis media episodes nor in regard to the number of U.R.T.Is. during the past six months.

Table (3): History of allergy in 129 patients with A.O.M.

		No. of patients	%
1.	Nasal symptoms (itchng, blockage, watery secetion	11/129	8.5
2.	A topic dermatitis or asthma	13/129	10.1
3.	Nasal symptoms and asthma/dermatitis	3/129	2.3
	Total	**27/129**	**20.9**

5. *Frequency of bilateral / unilateral (A.O.M.) acute otitis media:*

At the O-examination, 29 patients (22.5%) had bilateral accute otitis media (Table 4) by the time of the 1st follow-up examination, the other ear had also become involved in three patients (2.3%) with unilateral diseases.

Analysis by age groups of the distribution of unilateral and bilateral acute otitis media at the O-examination revealed that the frequency of bilateral disease was highest in the age group 3-4 year (Table 5).

Table (4): Percentage of bilateral and unilateral (patients end ears) disease at the O-examination and their percentages

	No of patients	% of patients	No. of ears	% of ears
Bilateral	29	22.5%	58	37
Unilateral	100	77.5	100	63
Total	129	100%	158	100%

Table (5): Bilateral and unilateral at the O-examination

Occurrence by age groups

(B=29. U = 100 = 158)

Age group (Year)	Bilteral disease		Unilateral disease		Total	
	No.	Percentage of age group %	No.	Percentage of age group %	No. of ears	%
3-4	19	65.5	12	12	50	31.6
5-8	6	20.6	44	44	56	35.4
9-15	3	10.3	48	38	44	27.9
16-over	1	3.5	6	6	8	5.1
	29	100	100	100	158	100

6. *Duration of ear symptoms before seeking medical aid*

The majority of the patients (104/129) ≃ 80.6% contacted the outpatients clinic within 12 hours of the onset of symptoms. 12 patients (9%) contacted the outpatient clinic within ≥ 24 hours.

The majority of the patients had taken therapy in the form of antipyretic analgesic (group or suppositories) before they reached the outpatient clinic, however (8/85) patients 9.4% of those with recurrent episodes (more than one attack) reached the outpatient clinic taking the treatment of the previous attack in the form of antibiotic and nasal drops and these constitute 8/129: 6%) of the present study.

It is also noted that the majority of patients were males as they constituted (71/129 patients: 55%) and the male to female index was 1.22. (Table 6).

Table (6): The frequency of the disease in males and females patients of the present study (and their percentages)

	Number of Patients	%
Male	71	55
Female	58	45
Total	129	100
Male/female index	1.22 (1.2 : 1)	

Table (7): The configuration of patients in the present study and the percentages of each group

Group	Number of patients	%	Number of ears	%
I	20	16	20	13
II	30	23	36	23
III	30	23	38	24
IV	30	23	40	25
V	19	15	24	15
Total (T)	129	100	158	100

Table (8)

Spontaneous rupture of the tympanic membrane the conservatively groups (I, II & III) 80 patients (94 ears)

	No. patients	No. of Ears	Rupture T.M.	Percentage in each group	Total %	
					of the conservatively treatment groups	of the whole study group
I	20	20	9	45	11	6
II	30	36	4	11	5	2.5
III	30	38	2	5	2.5	1.0
Total	80	94	15	--	18.5	9.5
	patients	Ears	Tympanic membrane		of the conservatively treated group (94 ears)	of the total No. of ears (158 ears)

Table (9): Tympanometric test results and clinical condition of the tympanic membrane at the O-examination of group B_1 (20 patients 40 ears)

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50	1*					1
Normal	51-100	4*					4
Normal	101-150	9*	2*		4*		15
Normal	151-200			13	7		20
Flat							
		14	2	13	11		40

* These 40 ears were 20 patients with unilateral affection.
* They were selected with an intact T.M. of the unaffected ear.
* 2/4 of the patients with the weakened light reflex had got previous past history of ear discharge.
* The pointed items (1*,4*,9*,2*,4*) are the 20 unaffected ears.

First follow-up examination :

Tympanometric measurements were performed to 134 ears [134/158) 85%]. On 15 ears the test were not carried out due to ruptured ear drums and these constitute 9% (15/158) of the total number of ears in the study group and 19% (15/80) of the conservatively treated ears in groups I, II and III. 9 ears had to be excluded[(9/158) 6%] on account of poor cooperation or technical difficulties.

Tympanometric test results and clinical condition of the tympanic membranes (T.M.) at the first follow up examination of 20 patients (20 e) group I] treated for A.O.M. (Table 10), shows that spontaneous rupture had occurred in 9 ears (45%). 10 ears 50% had effusion in the middle ear and proved to have flat (Type B) tympanograms. One ear 5% had retracted tympanic membrane and proved to be shifted to the left (type C) tympanogram.

Tympanometric test results and clinical condition of the tympanic membranes (T.M.) at the second follow-up examination of group (I) shows that 5/9 of the ruptured tympanic membranes had healed (with a conventional antibiotic). 9 patients (9 ears 45%) had effusion in the middle ear and proved to have flat (type B) tympanograms. One patient (1 ear 5 %) had type C-curve tympanogram. 4 ears (20%) had perforated tympanic membranes and 6 ears 30% had high negative middle ear pressure being- (100-150 mmH_2O).

Table (10): Tympanometric test results and clinical condition of the T. M. at the 1st follow up examination of 20 patients group I

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50						
Normal	51-100						
Normal	101-150						
Normal	151-200		1				1
Flat				10			10
Perforated T.M.						9	9
			1	10		9	20

20 ears = 9 perforated 45%
1 C curve 5%
10 M.E.E 50%

Table (11): Tympanometric test reuslts and clinical condition of the T M at the 2nd follow up examination of 20 patients group I

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50						
Normal	51-100						
Normal	101-150						6
Normal	151-200						1
Flat				9			9
						4	4
				9		4	20

20 ears	=	6	highly negative M.E.P.	30%
		4	perforated	20%
		1	C curve	5 %
		9	M.E.E.	45 %
		cure	6/20	30%

Tympanometric test results and clinical condition of the tympanic membranes of group (II) 36 ears at the second follow-up examination had revealed, no failure to do the test, 1 perforated tympanic membrane (2.8%) 4 ears (4/36 or 11.1%) type (C) tymponograms, 6 ears (6/36 or 16.6%) with flat tympanograms, also it is noted that 47.2% (17/36 ears) showed a middle ear pressure range between - (100 to - 150) mmH_2O Table (14), also the total percentage of cured ears at the second follow-up examination was 69.4% (25/36 ear) and the healed and improved ears were 29 and these constituted 80.5% .

Tympanometric test results and clinical condition of the tympanic membranes of group III (30 patients) 38 ears had revealed at the first follow-up examination, 2 ears with ruptured tympanic membranes (2/38 ears) 5.3 %. 5 ears (5/38) (13.1%) with type (C) tympanograms and 15 ears (15/38 ears) 39.5% with middle ear effusion and showing flat-curve tympanograms (Type B). All the patients were subjected to the test and there was no failure to perform the test in group III in the first follow-up examination , and (16/38 ears) 42.1% proved to be completely cured (Table 15).

Table (14): Tympanometric test results and clinical condition of the (T.M) at the 2nd follow-up examination of group (II) 30 patients 36 ears

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50	1					1
Normal	51-100	3	2		2		7
Normal	101-150	3	3		11		17
Normal	151-200			4			4
Flat				4	2		6
Failure						1	1
		7	5	8	15	1	36

Failure 0
Rupture T.M. 1/36 3%
Type (C) curve 4/36 11%
Type B curve 6/36 17%
Highly negative M.E.P. 17/36=47%

Table (15): Tympanometric test results and Clinical condition of the T.M. at the first follow-up examination of group III
30 patients (38 ears)

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50						
Normal	51-100				6		6
Normal	101-150	8			2		10
Normal	151-200			5			5
Flat				15			15
Failure						2	2
		8		20	8	2	38

Cure	42%
failure	16/38
Rutpure T.M. 2/38	5%
Type (C) curve 5/38	13%
Type (B) curve 15/38	39%

Tympanometric test results and clinical condition of the tympanic membranes of group (III) 30 patients 38 ears had revealed at the second follow-up examinatioin (Table 16) 11ears (11/38) 28.9% with type (C) tympanograms, 4 ears (4/38 e) 10.5% with flat curves-tympnograms (M.E.E.). Also there was no tympanic membrane perforation and the cureatio at the second follow-up in this group (group III) was (23/38 ears) 60.5 % however (13 /38 ears) 34.2% were with middle ear pressure ranging between (101-150) mmH_2O (i.e high negative middle ear pressure), and the total number of the healed and improved ears were 34 and these constituted 89.5% .

Tympanometric test results and clinical condition of the tympanic membrane at the first follow-up examination of group (IV) 30 patients 40 ears revealed failure of tympanometric evaluation in 4 patients (4 ears) (4/40 ears 10%). 6 ears (6/36) 16.6% showed type B-tympanograms with flat curves. One ear (1/36 ears) 2.7% with type C-curve tympanograms. 29 ears (29/36 ears) 80.5% showed a normal middle ear pressure (0-(-) 150 mmH_2O] with the largest numbers (21 ears) 58.3% with a high negative middle ear pressure [-(101-150)] mmH_2O. Table (17).

Table (16): Tympanometric test results and clinical condition of the T.M. at the second follow up examination of group (III) 30 patients (38 ears)

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50	2					2
Normal	51-100	7			1		8
Normal	101-150	3			10		13
Normal	151-200		3	4	4		11
Flat				3	1		4
Failure							
		12	3	7	16		38

Failure	--
Rupture T.M.	0%
Type (C) curve	11/38 ear or 29%
Type (B) curve	4/38 or 10.5 %
Highly negative	M.E.P. 13/38 ears or 34%.
Healing	23/38 = 60.5%

At the end of the second follow-up examination, the recaptulation of data of the conservatively groups i.e group(I), group (II) and group (III) (Table 12) reveals that the cure percentage is 35%, 69% and 60.5% consequently. The total cured ears are (54/94) ears i.e 57%.

However, we suspect that the cure ratio would be much more less than 35% in group (I) if the patients were not given antibiotics after the first follow-up investigation also it is not a real percentage of cure in this group as they were given antibiotic and this healing is not due to the frequent nasal drops instillation. Middle ear effusion was detected in 37/89 ear at the first follow-up (41.5%) and in 19/94 ears (20%) at the second follow-up examination.

Tympanometric test results and clinical condition of the tympanic membranes of group (II) 30 patients (36 ears) had revealed at the first follow up examination, 4 ears with ruptured tympanic membranes (4/36 = 11.1%), 3 patients (5 ears) were not subjected to the test due to poor cooperation, 3 ears (3/31 or 9.7%) with tympanograms shifted to the left due to negative (-150 to -200 mmH_2O) pressure i.e type (C) curve and 12 ears (12/31 or 38.7%) with flat tympanograms. Also 38.7% (12/31 ears) of group II proved to be completely cured (Table 13).

Table (12): Results concerning the passively treated groups (I, II & III) 80 patients, 94 ears at the first and second follow-up investigation schedule

		First follow-up		Second follow-up	
Failure of test in	GI	-		-	
	GII	5		-	
	GIII	-		-	
Rupture T.M. in	GI	9		4	
	GII	4		1	
	GIII	2		-	
M.E.E. in	GI	10		9	
(B-tympanograms)	GII	12	41.5%	6	20%
	GIII	15		4	
C-Curve in :	GI	1		1	
(tympanograms)	GII	3		4	
	GIII	5		11	
high -ve MEP in	GI	-		6	
-(101-150) mmH2O	GII	9		17	
	GIII	10		13	
Cure % in :	GI			6/20	30%
	GII	12/31	39%	25/36	69%
	GIII	12/38	42%	23/38	60.5%
Total cure %				54/94	57%

Table (13): Tympanometric test results and clinical condition of the T.M. at the 1st follow-up examination of group (II) 30 patients (36 ears).

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50	1					1
Normal	51-100				2		2
Normal	101-150				9		9
Normal	151-200			3			3
Flat				10	2		12
						4	4
Failure							5
5		1		13	13	4	36

Failure to perform the test 5/36 ≃ 14%
Rupture T.M. 4/36 11%

Curve 12/31 39%
Type(C) Curve 3/31 10%
Type (B) Curve 12/31 39%
* Highly negative M.E.P 9/31 29%.

Table (17): Tympanometric test results and clinical condition of the T.M. at the 1st follow up examination of group IV 30 patients 40 ear

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50	1					1
Normal	51-100	4	1	1	1		7
Normal	101-150	17	3		1		21
Normal	151-200			1			1
Flat				6			6
Failure							4
4		22	4	8	2		40

- Perf
- Failure of tympanometric evaluation in 4 patients (4 ears) 4/40 10%
- Cure 29/36 80.5%

Perforated T.M.
Type (C) curve 1/36 or 3 %
Type (B) curve 6/36 or 17%

Tympanometric test results and clinical condition of the tympanic membranes of group (IV) 30 patients 40 ears (e) had revealed at the second follow-up examination (Table 18) 32 normal ears despite a failure to perform the test in 3 ears (3/40 ears) 7.5 % so the cure ratio was (32/37 ears) 86.5%. 3 ears (3/37 ears) 8.1 % of group (IV) showed type c-curve tympanograms and 2 ears (2/37 ears) 5.4% with middle ear effusion (type B-curve tympanograms). It is also noted that the total number of healed and improved ear was (35/37 ears) 94.6%).

Tympanometric test results and clinical condition of the tympanic membranes of group five (19 patients) 24 ears had revealed at the first follow-up examination, 6 ears (6/24 ears) 25% with type C-tympanograms, 4 ears (4/24 ears) 16.6% with type (B) curve tympanograms (M.E.E). Also 14 ears (58.3%) proved to be cured. However, 10 ears of them (10/24) 41.7% showed a highly negative middle ear pressure [-(101-150) mmH_2O] Table (19).

Table (18): Tympanometric test results and clinical condition of the T.M. of the 2nd follow up examination of group

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50	4					4
Normal	51-100	7			1		8
Normal	101-150	12	1	7			20
Normal	151-200		1	2			3
Flat				2			2
Failure	3						3
		23	2	11	1		40

Cure 32/37 = 86.5%

Failure	3/40 or	7.5%
Perforted T.M.	----	
Type (C) curve	3/37	8 %
Type (B) curve	2/37	5%

Table (19): Tympanometric test results and clinical condition of the (T.M.) at the first follow-up examination of group (V), 19 patents (24 years)

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of cars	No.of ears	
Normal	0-50						
Normal	51-100				4		4
Normal	101-150	4		6			10
Normal	151-200	1	1	4			6
Flat				4			4
Failure							
		5	1	14	4		24

Failure	
Cure	14/24 = 58%
Rupture T.M.	
Type (C) Curve	6/24 = 25%
M.E.E. (B) curve	4/24= 17%
High (-ve) MEE	10/24=42

Tympanometric test results and clinical condition of the tympanic membranes of 19 patients (24 e) group five had revealed at the second follow-up examination (Table 20) 20 normal ears (20/24 ears) 83.3%. 2 ears showed a flat curve (Type B) tympanograms (2/24 ears) 8.3 % also two ears (8.3%)were with type C-tympanograms. There was no failure to perform the test in both follow-up examinations and the total number of healed and improved ear was (22/24 ears) i.e 91.7% .

Despite the invasive manouver (myringotomy) done for the actively treated groups i.e. group IV and group V there was no failure to perform the test in both the first and the second follow-up examination (Table 21) also the cure percentage in 86.5% in group (IV) and 83% in group (V) and the total cured ear are (52/61) 85% end of the second follow-up examination. Middle ear effusion was detected in 10/60 ears (16.6%) at the first follow-up examination and in 4/61 ears (6.5%) at the second follow-up examination.

Table (20: Tympanometric test results and clinical condition of the (T.M.) at the 2nd follow-up examination of group (V), 19 patients (24 ears)

Tympanogram		Clinical Condition of the T.M.					Total
		Normal	Reduced mobility		Light reflex weakened	Perforated T.M.	
Shape	- mmH_2O	No.of ears	No.of ears	No.of ears	No.of ears	No.of ears	
Normal	0-50				1		1
Normal	51-100	7					7
Normal	101-150	10			2		12
Normal	151-200				2		2
Flat				2			2
Failure							
		17		2	5		24

Cure ratio 20/24 = 83 %

Failure
Rupture T.M.
Type (C) Curve 2/24 = 8%
M.E.E. (B) curve 2/24= 8%
High (-ve) M.E.P. 12/24 = 50%

Table (21): Results concerning the actively treated groups (IV & V) 49 patients, 64 ears at the first and second follow-up scedule.

	First Follow-up	Second follow-up
Failure of test in:		
GIV	4	3
GV	--	--
Rupture T.M. in		
GIV	-	-
GV	-	-
M.E.E. in		
GIV	6	2
GV	4	2
C-Cure Tympanogram		
IV	1	3
V	6	2
High-ve MEP in - (100-150)mmH_2O		
GIV	21	20
GV	10	12
Cure % in:		
GIV	(29/36) 80.5%	(32/37) 86.5%
GV	(14/24) 58%	(20/24) 83 %
Total cure %		52/61 85%

Tympanometric test results and clinical condition of the tympanic membranes of the patients at the end of the study shows that in a total of 158 ears, 3% are with tympanic membrane perforation, 15% with middle ear effusion, 13% with eustachian tube dysfunction and the healing have occurred completely in 67% of the patients however the percentage of healing in the five groups respectively is; 30 %, 69%, 60.5%, 86.5% and 83% (Table 22 & Table 23).

Table (22): Configuration of the healing percentage versus healed and improved percentage

	Healed %	Helaed & Improved %
Group I	30%	35 %
Group II	69%	80.5 %
Group III	60.5%	89.5%
Group IV	86.5%	95%
Group V	83%	92%

Table (23): Tympanometric test result of 158 ears (and their percentage) at the end-visit

	Number of ears	Percentage
Failure to perform the test	3	2
Rupture of T.M.	5	3
Healing	106	67
B-tympanogram curves	23	15
C-Tympanograms	21	13
Total	158	100

Table (24) : Data recaptulation from the first and second follow up of the patients in the study group (158 ears-five subgroups I, II, III, IV & V)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
I	20	20	0	0	9	45%	6%	4	20%	2.5%	6	-	4%	-	6	30%	4%	1	1	5%
II	30	36	5	0	4	11%	25%	1	3%	0.6%	25	69%	16%	9	17	47%	11%	3	4	11%
III	30	38	0	0	2	5%	1%	-	-	-	23	60.5%	14.5%	10	13	34%	8%	5	11	29%
IV	30	40	4	3	-	-	-	-	-	-	32	86.5%	20%	21	20	50	12.5%	1	3	8%
V	19	24	0	0	-	-	-	-	-	-	20	83%	12.6%	10	12	50%	7.5%	6	2	8%
t	129	158	9	3	15	-	95%	5	-	3%	106	-	67%	50	68	–	43%	16	21	–

	U	X	Y	Z	V	W
I	0.5%	10	50%	9	45%	6%
II	2.5%	12	39%	6	17%	4%
III	7%	15	39%	4	10.5%	2.5%
IV	2%	6	15%	2	5%	1%
V	1%	4	17%	2	8%	1%
t	13%	47	-	23		14.5%

A	No of patients
B	No of ears
C	Failure to perform the test in the first visit
D	Failure to perform the test in the second visit
E	No. of T.M. perforation in the first visit
F.	% of T.M. perforation (in each group) in the 1st visit
G.	Total percentage (%) of T.M perforation in the 1st visit
H.	No. of T.M. perforation in the 2nd visit
I	% of T.M. perforation (in each group) in the 2nd visit
J	Total percentage (%) of T.M. perforation in the 2nd visit
K	Numbr of cured ear at the end visit
L	% of cure in each group
M	Total percentage of cured ears at the end visit
N	Number of ears with high -ve M.E.P at 1st visit
O	Number of ears with high -ve M.E.P at 2nd visit
P	Percentages of ears with -ve M.E.P in each group.
Q	Total percentage of ears with -ve M.E.P at 2nd visit.
R	Number of ears with type (C) tympanograms at 1st vist
S	Number of ears with type (C) tympanograms at 2nd visit.
T	Percentage of ears with type (C) tympanograms in each group
U	Total percentage of ears with type (C) tympanograms

X	Number of ears with M.E.E. in the first visit
Y	Percentage of ears with M.E.E. in each group
Z	Number of ears with M.E.E. in the second visit
V	Percentage of ears (in each group) with M.E.E. in 2nd visit.
W	Total percentage of ears with M.E. E. in the second visit.

Control group :

Twenty normal subjects were examined, their mean age was 12.7 years, range was between 7 and 33 years, 30% were females (6 subjects). Their mean pure tone audiograms (P.T.A) were (12.01) d.B as the range was between -5 dB and 20 dB.

The ventilatory function test done for them was tympanometric evaluation of the middle ear pressure as shown in table (25 A) where the M.E.P. varied from [-(100) mmH_2O] to [+(25) mmH_2O]. 25% of the subjects had difference between the two ears but within the normal M.E.P. range [i.e +(50) to - (150)] mmH_2O as 3 patients 15% had 10 mmH_2O pressure difference between the two ears and 2 patients (10%) had 20 mmH_2O pressure difference between the two ears.

The highest percentage of the ears (22.5%) have the middle ear pressure in the range of [0 to (-) 10]mmH_2O, 15 % have negative M.E.P. [(-) 20 to (-)30] mmH_2O, 15% with (0) mmH_2OM.E.P. and four equal groups each one of them is 5%, having their middle ear air pressure in the range (0 to (+) 10) mmH_2O, [(-) 30 to (-) 40] mmH_2O, [(-) 40 to (-) 50] mmH_2O and [(-) 50 to 100] mmH_2O Table 26 A.

Table (25 A, B)

Case Number	M.E.P. in mm H_2O		Difference between the 2 ears (mmH_2O)
	Right ear	Left ear	
1	(+)10	+ 10	-
2	0	0	-
3	(-) 10	(-) 20	10
4	(-) 20	(-) 30	10
5	(-) 10	(-) 10	-
6	(-) 20	0	20
7	(+) 25	(+) 25	-
8	(-) 20	(-) 20	-
9	(-) 30	(-) 10	20
10	(-) 10	(-) 10	-
11	(-) 30	(-) 30	-
12	(+) 25	(+) 25	-
13	(-) 10	0	10
14	(+) 25	(+) 25	--
15	(-) 30	(-) 30	-
16	0	0	-
17	(-) 100	(-) 100	-
18	(-) 10	(-) 10	-
19	(-) 50	(-) 50	-
20	(-) 40	(-) 40	-

Table (26 A,B)

M.E.P. mmH_2O	No. of ears	Percentage
+25: (+) 10	6	15
+ 10: 0	2	5
Zero (0)	6	15
O: (-) 10	9	22.5
(-)10:(-)20	5	12.5
(-)20: (-)30	6	15
(-)30:(-)40	2	5
(-)40:(-)50	2	5
(-)50:(-)100	2	5
Total	40	100