Results

This study was done to evaluate the effect of IFN &RBV on hearing and cochlear hair cells. It was carried out on 50 patients with compensated chronic HCV and treated with IFN & RBV.

After full history taking and clinical examination they were investigated with Pure Tone Audiometry, Otoacoustic Emission (OAE) and Tempanometry to evaluate the ototoxic effect of IFN & RBV.

The statistical analysis showed the following results:

(Table 1):shows the frequency distribution table for age among studied group

	N=50
Age **Range**	**35.7±2.7** **(31-42)**
30-35 **36-40** **>40**	**27 (54%)** **20 (40%)** **3 (6%)**
P	**<0.001****

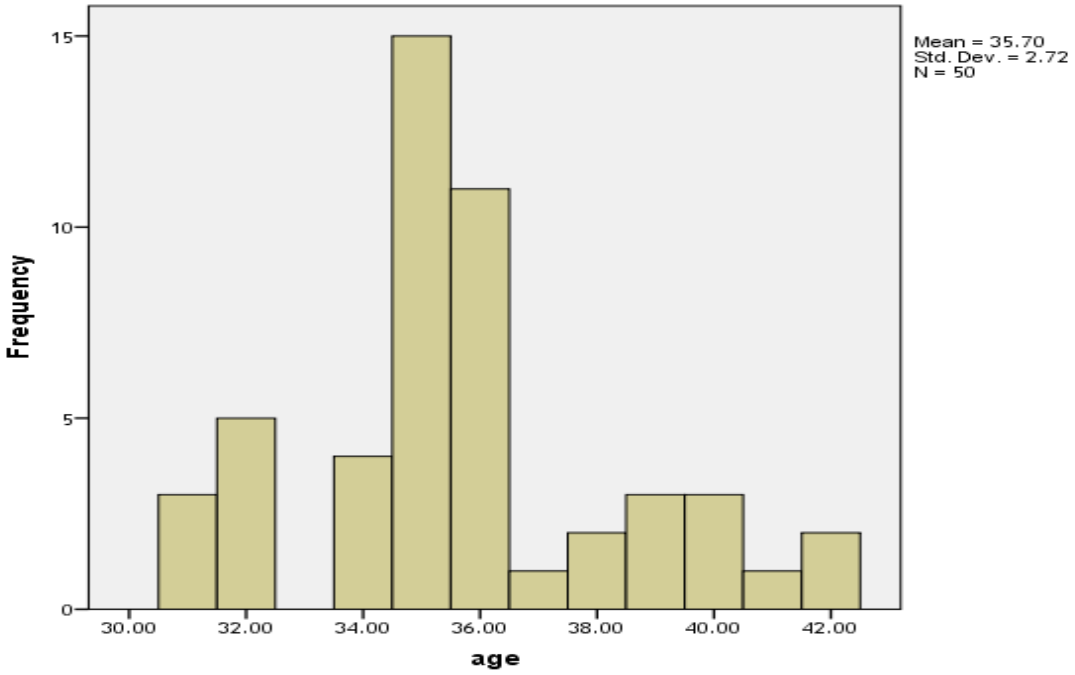
Table 1: shows that the mean average of age in the studied group was 35.7 ranges between (31-42).
54% of studied sample were aged from 30-35, 40% from 36-40 and only 6% more than 40 years old.
There is significant difference between numbers of each group.

(Table 2): shows the frequency distribution table for SEX among studied group

	Male	Female	Total	P
SEX	**37 (74%)**	**13 (26%)**	**50 (100%)**	**<0.001****

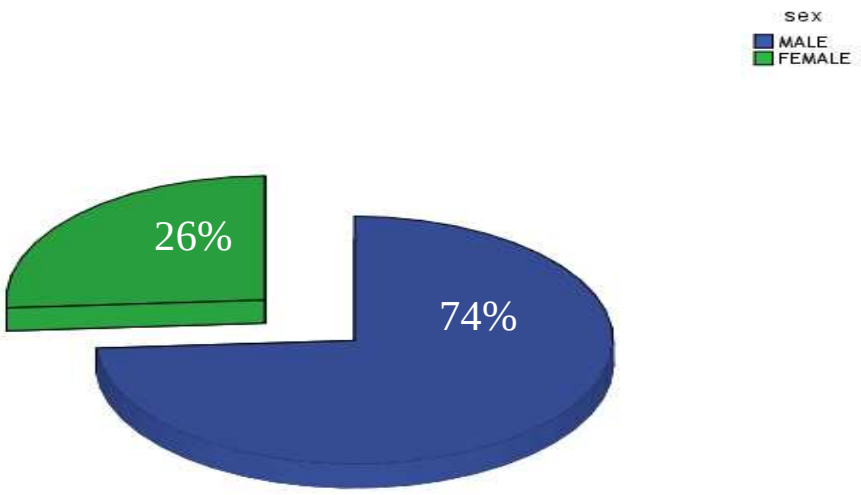
Regarding sex there were 37 male & 13 female (74%) & (26%) respectively.
There is significant difference between number of males and females.

(Graph 1): Histogram for age distribution among studied group



Graph 1 shows the age distribution among studied group and the mean of age also the standard deviation

(Graph 2): pie diagram for sex distribution



Graph 2 shows the sex distribution among studied group as 26% of the studied group were female (13) , and 74% of them were male (37).

(Table 3): shows the association between treatment with Interferon and OAE results.

	Before	during	after	X^2	P
Pass	50	40	40	3.5NS	
	100%	80%	80%		
Failed	0	10	10	10	<0.05*
	0%	20%	20%		
Total	50	50	50		
	100%	100%	100%		

Table **3**: shows OAE before, during (at the 6st month of therapy),after treatment with INF.

10/50 failed and 40/50 pass during treatment.

After treatment 40/50 pass and 10/50 still failed

(Table 4): shows the association between treatment with Interferon and Tympanometry results.

			before	during	After	X^2	P
TYMPANOGRAM	A	Count	45	45	41	1.9	NS
		%	90.0%	90.0%	82.0%		
	C	Count	5	5	9		
		%	10.0%	10.0%	18.0%		
Total		Count	50	50	50		
		%	100.0%	100.0%	100.0%		

Table 4 shows no significant change in Tympanometry results during course of treatment with interferon regarding time of administration either before, during or after treatment.

There is no association between treatment with interferon and Tympanometry results.

(Table 5): shows the impacts of treatment course ofInterferon onAudiometry results.

N=50		Mean	SD	Range
MHT-0	Right	13.6	1.7	(12 – 15.9)
	Left	13.7	1.6	(12.1 - 15.8)
MHT-7	Right	18.4	2.3	(12 - 29)
	Left	18.6	1.9	(12.1 – 30)
MHT-21	Right	18.8	2.8	(12 - 31)
	Left	18.9	2.2	(12.1 – 31.5)
MHT-30	Right	18.9	2.9	(12 - 31)
	Left	19.1	2.3	(12.1 – 31.5)
MHT-60	Right	19.2	2.2	(12 - 31.5)
	Left	19.3	2.1	(12.1 – 32.2)
MHT- POST TTT 30	Right	15.2	2.4	(12 - 28.5)
	Left	15.3	1.8	(12.1 – 28.8)
MHT-POST TTT 60	Right	15.1	2.1	(12 – 27.9)
	Left	15.2	1.5	(12.1 – 28)

Table 5 shows Audiometry results affected by interferon treatment course

The mean hearing threshold of patients were 13.6 for right ear and 13.7 for left ear before treatment.
It began to increase during treatment, and then decreased to become 15.1 for right ear and 15.2 for left ear at 2monthes aftertermination of therapy

(Table 6):shows thedifference between Audiometery readings of the right ear in the different time of Interferon treatment course

	Paired t	P
MHT-0 (PRE) &MHT-7	**-5.3**	**<0.001****
MHT-0 &MHT-21	**-4.93**	**<0.001****
MHT-0 &MHT-30	**-4.82**	**<0.001****
MHT-0 &MHT-60	**-2.86**	**<0.05***
MHT-0 &MHT-30 (POST TTT)	**-2.94**	**<0.05***
MHT-0 &MHT-60 (POST TTT)	**-2.86**	**<0.05***
MHT-7 &MHT-21	**1.3**	**NS**
MHT-7 &MHT-30	**1.5**	**NS**
MHT-7 &MHT-60	**1.6**	**NS**
MHT-7 &MHT-30 (POST TTT)	**2.6**	**<0.05***
MHT-7 &MHT-60 (POST TTT)	**2.8**	**<0.05***
MHT-21 &MHT-60	**1.4**	**NS**
MHT-21 &MHT-30	**1.4**	**NS**
MHT-21 &MHT-60 (POST TTT)	**4.9**	**<0.001****
MHT-30 &MHT-60	**1.6**	**NS**
MHT-30 &MHT-30 (POST TTT)	**2.4**	**<0.05***
MHT-60 &MHT-30 (POST TTT)	**2.6**	**<0.05***
MHT-60 &MHT-60 (POST TTT)	**2.8**	**<0.05***
MHT-30 (POST TTT) &MHT-60 (POST TTT)	**1.1**	**NS**

Table 6 shows that there is significant difference between reading of the day before treatment and day 7,21,30,60,1month after treatment & 2 month after treatment course finished.

Also there is significant difference between reading of day 7 and 1,2 month after treatment course finished but no significant difference between day 7 and day 21,30& 60.

There is significant difference between reading of day 21 and 1,2 month after treatment course but no significant difference between day 21&30,60. There is no significant difference between day 30 and day 60.

Also there is no significant difference between reading of 1 month after treatment course and 2 months after treatment.

(Table 7):shows thedifference between Audiometery readings of left ear in the different time of Interferon treatment course

	Paired t	P
MHT-0 (PRE) &MHT-7	**-5.4**	**<0.001****
MHT-0 &MHT-21	**-4.83**	**<0.001****
MHT-0 &MHT-30	**-4.56**	**<0.001****
MHT-0 &MHT-60	**-2.66**	**<0.05***
MHT-0 &MHT-30 (POST TTT)	**-2.64**	**<0.05***
MHT-0 &MHT-60 (POST TTT)	**-2.76**	**<0.05***
MHT-7 &MHT-21	**1.2**	**NS**
MHT-7 &MHT-30	**1.5**	**NS**
MHT-7 &MHT-60	**1.5**	**NS**
MHT-7 &MHT-30 (POST TTT)	**2.6**	**<0.05***
MHT-7 &MHT-60 (POST TTT)	**2.8**	**<0.05***
MHT-21 &MHT-60	**1.4**	**NS**
MHT-21 &MHT-30	**1.3**	**NS**
MHT-21 &MHT-60 (POST TTT)	**4.2**	**<0.001****
MHT-30 &MHT-60	**1.4**	**NS**
MHT-30 &MHT-30 (POST TTT)	**2.3**	**<0.05***
MHT-60 &MHT-30 (POST TTT)	**2.7**	**<0.05***
MHT-60 &MHT-60 (POST TTT)	**2.9**	**<0.05***
MHT-30 (POST TTT) &MHT-60 (POST TTT)	**1.2**	**NS**

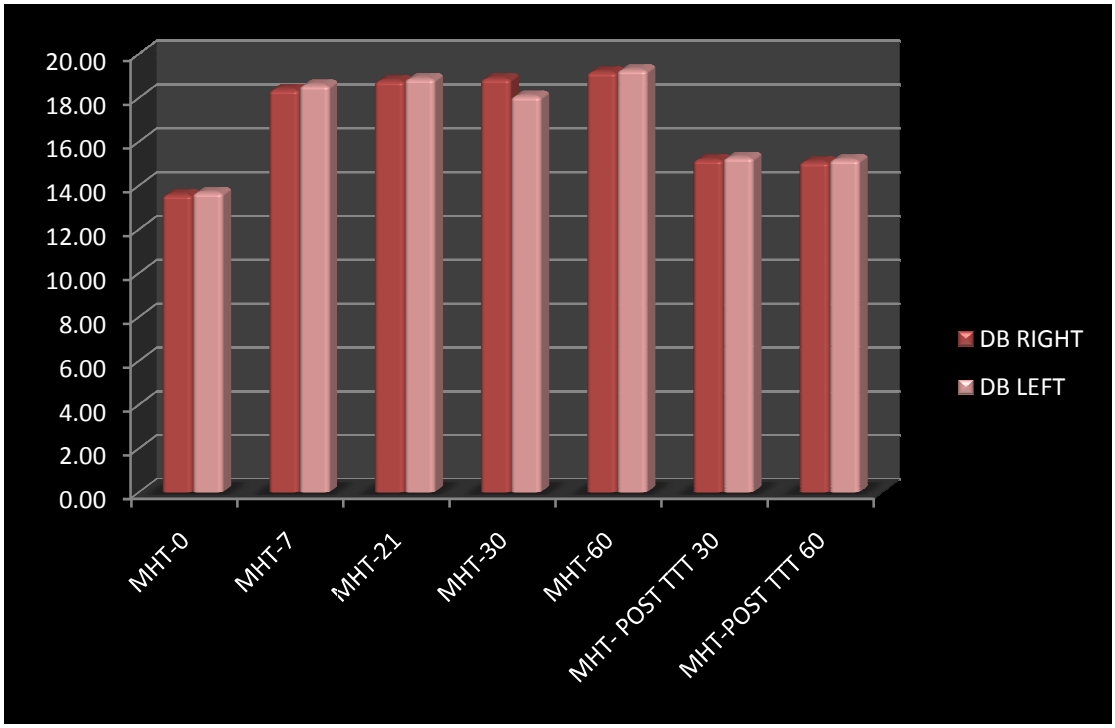
Table7:shows that there is significant difference between reading of the day before treatment and day 7,21,30,60,1month after treatment & 2 month after treatment course finished.

Also there is significant difference between reading of day 7 and 1,2 month after treatment course finished but no significant difference between day 7 and day 21,30& 60.

There is significant difference between reading of day 21 and 1,2 month after treatment course but no significant difference between day 21&30,60. There is no significant difference between day 30 and day 60.

Also there is no significant difference between reading of 1 month after treatment course and 2 months after treatment.

(Graph 3): bar chart represents Audiometery reading through the course of Interferon treatment



Graph 3 shows the Audiometery reading affection through the course of interferon treatment

(Table 8): Thedistribution of cases according to Audiometery reading changes

Changed	Not noticeable Changed	X^2	P
20 (40%)	30 (60%)	4	<0.05

This table shows significant difference between changed cases and cases with no noticeable change P=<0.05

(Table9): The distribution of changed cases according to prognosis

Changed				
Returned totally	Returned healthy but less than previous	Disabled	X^2	P
10 (50%) (20% from total)	8 (40%) (16% from total)	2 (10%) (4% from total)	26	<0.001

This table shows highly significant difference among changed cases

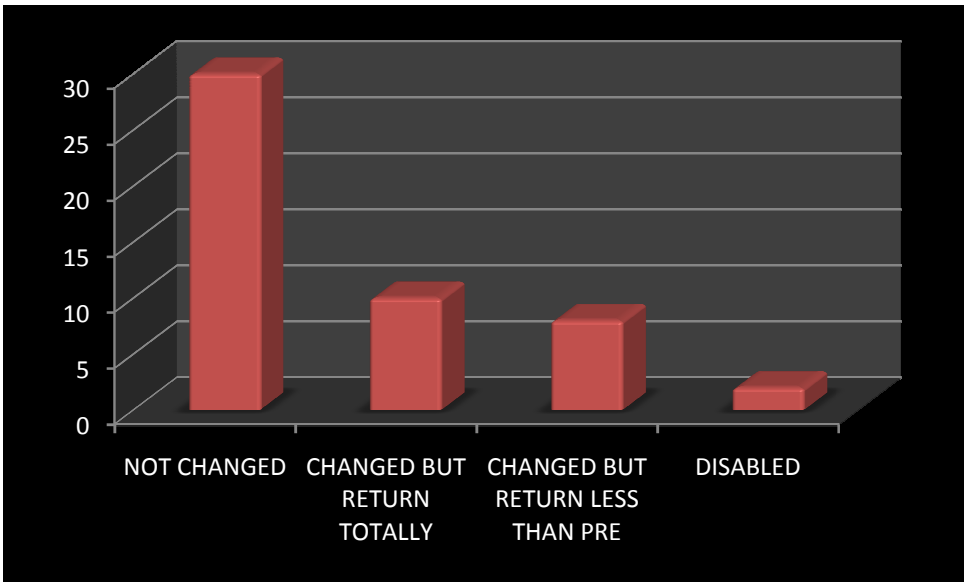
(Table10): The distribution of changed cases regarding affected ear (unilateral or bilateral)

Changed					
Unilateral		Bilateral		X^2	P
14	70%	6	30%	16	<0.001

This table shows highly significant difference between unilateral and bilateral cases P=<0.001

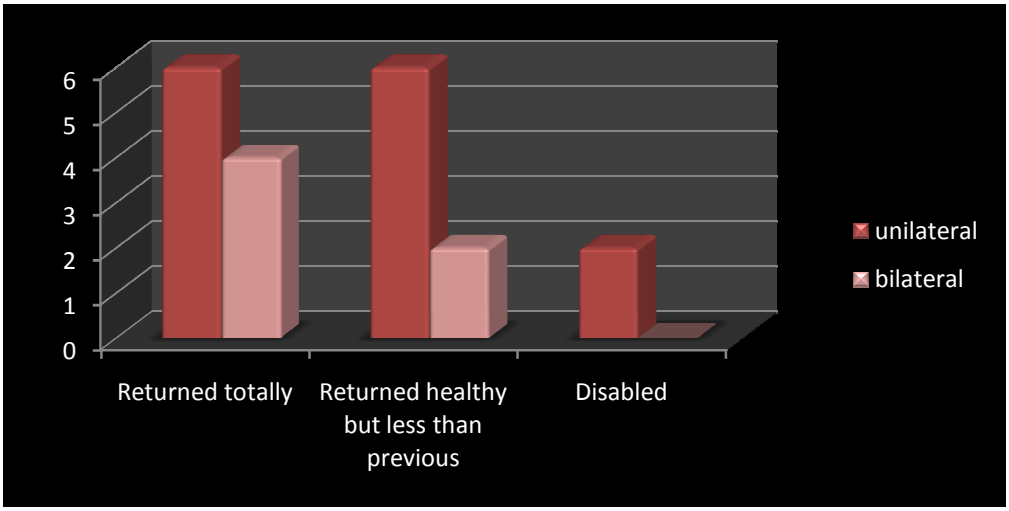
There are 30 cases (60%) without noticeable change in Audiometery readings & 20 cases (40%) with noticeable change half of them (10 cases) returned totally 6 were unilateral and 4 bilateral , 40% (8 cases)of them returned but less than previous 6 were unilateral and 2 were bilateral and 10% (2 cases) all were unilateral of them disabled.

(Graph 4): bar chart of cases according to Audiometery reading changes



Graph 4 shows that there are 30 cases without noticeable change in Audiometery readings & 20 cases with noticeable change (10 cases) from them returned totally , 8 cases from them returned but less than previous and 2 cases from them disabled.

Graph 5: bar chart of cases withnoticeable change



This graph show distribution of changed cases between unilateral and bilateral hearing loss.

(Table 11):shows the Correlation betweenAudiometery readings in different time of Interferon treatment course.

N			R	P
MHT-0 &MHT-7	Right	50	0.52	<0.001**
	Left	50	0.51	<0.001**
MHT-0 &MHT-21	Right	50	0.48	<0.001**
	Left	50	0.48	<0.001**
MHT-0 &MHT-30	Right	50	0.42	<0.001**
	Left	50	0.45	<0.001**
MHT-0 &MHT-60	Right	50	0.54	<0.001**
	Left	50	0.61	<0.001**
MHT-0 &MHT-30 POST TTT	Right	50	0.49	<0.001**
	Left	50	0.49	<0.001**
MHT-0 &MHT-60 POST TTT	Right	50	0.54	<0.001**
	Left	50	0.59	<0.001**
MHT-7 &MHT-60	Right	50	0.66	<0.001**
	Left	50	0.69	<0.001**
MHT-0 &MHT-60 POST TTT	Right	50	0.66	<0.001**
	Left	50	0.65	<0.001**
MHT-7 &MHT-60	Right	50	0.84	<0.001**
	Left	50	0.79	<0.001**
MHT-0 &MHT-60 POST TTT	Right	50	0.74	<0.001**
	Left	50	0.75	<0.001**

(Table11): shows that there is significant positive correlation among Audiometery reading in different time of interferon treatment course.