Results

The results of this study were illustrated in Tables (1-9) and Figures (4-17).

Clinical characteristics of the studied groups (Table -1)

Shows the clinical characteristics of the studied groups as regards the sex , age , body mass index (BMI), systolic and diastolic blood pressure and history of ischemic heart disease . There were 17 females and 13 males in the control group , 19 females and 31 males in the offspring group and 27 females and 23 males in the hypertensive group. The control group and the offspring group showed no significant difference (p > 0.05) as regard age (25.4 ± 2.76 vs 28.0 ± 4.67 years), BMI (26.1 ± 3.23 vs 26.3 ± 2.72 kg/m^2), systolic blood pressure (118 ± 6.9 vs 118.4 ± 8.36 mm Hg) and diastolic blood pressure (75.67 ± 4.69 vs 76.2 ± 4.9 mm Hg), but in the hypertensive group the mean age, systolic blood pressure and diastolic blood pressure were 56.2 ± 4.7 years, 157.5 ± 7.8 mm Hg and 99.2 ± 6.95 mmHg , p< 0.001, respectively which were significantly higher than in the control and offspring groups. There was no significant difference as regard BMI among the three studied groups.

Fifteen patients out of the 50 hypertensive patients had ischemic heart disease but the offspring and the control group had not ischemic heart disease .

Biochemical parameters of the studied groups (Table –2)

Shows the biochemical parameters of the studied groups as regard serum creatinine, blood urea, haemoglobin, serum calcium, serum sodium, serum potassium, serum uric acid, fasting and postprandial blood sugar. The three studied groups showed no significant difference ($p > 0.05$) as regard serum creatinine (0.95 ± 0.23, 0.96 ± 0.17 & 1.1 ± 0.15 mg/dl), hemoglobulin (13.48 ± 0.96, 13.5 ± 0.88, 12.8 ± 1.1 gm /dl), serum calcium (9.5 ± 0.65, 9.4 ± 0.68 & 9.2 ± 0.76 mg/dl), serum sodium (135.9 ± 4.17, 135.3 ± 3.95 & 138.3 ± 4.37 mEq/l), serum potassium (4.32 ± 0.61, 4.37 ± 0.59 & 4.32 ± 0.37 mEq/l), fasting blood sugar (95.23 ± 10.84, 99.96 ± 11.86 & 104.12 ± 9.54 mg/dl) and postprandial blood sugar (136.53 ± 10.77, 138.92 ± 7.39 & 140.1 ± 6.52 mg/dl) . Regarding blood urea and serum uric acid , they were significantly higher in offspring group (30.7 ± 5.43 mg/dl, 5.64 ± 0.88 mg/dl, $p < 0.05$) and hypertensive group (34.12 ± 4.15 mg/dl, 6.79 ± 0.89 mg/dl , $p < 0.05$) than the control group (28.07 ± 3.94 mg/dl & 4.94 ± 1.16 mg/dl, respectively).

Lipids profile in the studied groups (Table - 3 and Fig.- 4)

Show comparison among the studied group as regard total cholesterol, triglycerides, HDL-c and LDL-c . The hypertensive group and the offspring group showed significant higher total cholesterol (190.6 ± 27.28 & 170.6 ± 29.21 mg/dl, $p < 0.001$ & 0.01, respectively), triglycerdies

(141.4 ± 49.68, 129.36 ± 47.68 mg/dl, p<0. 001 & 0.01, respectively) and LDL-c (120.48 ± 30.86 & 98.76 ± 29.49 mg/dl, p< 0.001 & 0.05, respectively) compared to the control group (143.53 ± 28.63 mg/dl, 89.13 ± 26.59 mg/dl & 76.97 ± 26.2 mg/dl respectively). Also the hypertensive group showed significant higher total cholesterol (p < 0.05), triglycerides (p< 0.05) and LDL - c (p<0.01) compared to the offspring group. As regard HDL-c, the hypertensive group and the offspring group showed significant lower HDL-c (41.82 ± 3.8 & 46.0 ± 4.19 mg/dl , p< 0.01 & 0.05, respectiely) compared to the control group (50.9 ± 3.29 mg/dl), also the hypertensive group showed significant lower HDL-c compared to the offspring group with p< 0.05.

Specific biochemical parameters of the studied groups [Table - 4 and Figs. (5-11)]

Show comparison among the studied groups as regard microalbuminuria, serum insulin, plasma norepinephrine, plasma homocysteine, plasma endothelin, urinary endothelin and plasma renin concentrations . The hypertensive and the offspring groups had significant higher microalbuminuria (152.3 ± 114.92 & 63.1 ± 37.19 µg/ml, p< 0.001, 0.001, respectively), serum insulin (20.82 ± 12.73 & 17.33 ± 11.74 µIu/ml, p< 0.001, 0.01, respectively), plasma norepinephrine (374.6 ± 146.01 & 352.2 ± 96.01 Pg/ml, p< 0.001, 0.001, repsectively), plasma homocysteine

(16.21 ± 10.12 & 13.94 ± 6.04 µmol/l, p< 0.01, 0.05, respectively) and plasma renin (86.34 ± 55.0 & 65.36 ± 33.87 Pg/ml, p< 0.001, 0.01, respectively) compared to the control group (8.06 ± 5.98 µg/ml, 9.62 ± 4.31 µIu/ml, 163.67 ± 39.35 Pg/ml, 10.79 ± 5.23 µmol/l & 30.8 ± 7.03 Pg/ml, respectively). The hypertensive group had significant higher microalbuminuria (p< 0.001), plasma renin concentration (p< 0.01) compared to the offspring group, but there is no significant difference as regard serum insulin, plasma norepinephrine, plasma homocysteine between the hypertensive and the offspring group (p> 0.05). The hypertensive group had significant higher plasma endothelin (1.73 ± 0.525 F mole/ml, p< 0.05) compared to control group (1.23 ± 0.419 F mole/ml), but there was no significant difference in plasma endothelin between the hypertensive group (p> 0.05) and the offspring group (1.58 ± 0.47 F mole/ml) and between the offspring group and the control group. As regard urinary endothelin, the hypertensive group and the offspring group had significant lower urinary endothelin (113.84 ± 32.75 & 129.92 ± 40.35 Pg/24 h, p< 0.05) compared to the control group (140.77 ± 35.31 Pg/24 h). Aso the hypertensive group had significantly lower urinary endothelin than the offspring group with p< 0.05.

Doppler and echocerdiographic parameters of the studied groups [Table -5 and Figs. (12-17)]

Show comparison among the studied groups as regard arterial

compliance, left ventricular mass, interventricular septum thickness (IVST), LV posterior wall thickness (PWT), LV diastolic diameter (LVDD), early peak diastolic filling (E wave), late peak diastolic filling (A wave), E/A ratio and ejection fraction.

The hypertensive group and the offspring group had significant higher LV mass (226.54 $\pm$ 42.27 & 177.94 $\pm$ 36.9 gm, p< 0.001, 0.01, respectively), septal thickness (13.1 $\pm$ 1.3 & 11.54 $\pm$ 1.13 mm, p< 0.01, 0.05, respectively), and LV posterior wall thickness (12.82 $\pm$ 1.51 & 11.48 $\pm$ 1.18 mm, 0.01, 0.05, respectively) compared to the control group (95.33 $\pm$ 19.19 gm, 7.9 $\pm$ 1.03 mm & 8.07 $\pm$ 1.31 mm respectively) and the hypertensive group had significant higher LV mass, IVST, LVWT compared to the offspring group with p< 0.01, 0.05, 0.05, respectively. There was no statistical significant difference in the LVDD among the three studied groups. The hypertensive group and the offspring group had significant lower arterial compliance (0.134 $\pm$ 0.06 & 0.18 $\pm$ 0.07 %10 mm Hg, p< 0.001, 0.01, respectively) compared to the control group (0.26 $\pm$ 0.06 %10 mm Hg) also the hypertensive group had significant lower arterial compliance (p< 0.05) compared to the offspring group.

As regard the left ventricular diastolic function (LVDF) (E/A ratio), the hypertensive group and the offspring group had significant lower E/A ratio (0.84 $\pm$ 0.13 & 1.13 $\pm$ 0.12, p< 0.05) compared to the control group

(1.56 ± 0.12). Also the hypertensive group had significant lower E/A ratio (p< 0.05) compared to the offspring group.

The hypertensive group had significant lower ejection fraction (46.9 ± 5.32 %) compared to the offspring group (59.4 ± 4.22 %, p< 0.01) and the control group (60.5 ± 4.39 %, p< 0.01), but there is no significant difference (p> 0.05) in ejection fraction between the offspring group and the control group.

Comparison of different parameters between hypertensive patients with and without ischemic heart disease (Table - 6)

Shows comparison between the hypertensive patients with ischemic heart disease (15 patients) and hypertensive patients without ischemic heart disease (35 patients) . The former had a significant higher age, systolic blood pressure, diastolic blood pressure, total cholesterol, LDL-c, microalbuminuria, insulin , norepinephrine, homocysteine , urinary endothelin, renin and left ventricular mass and had significant lower triglycerides concentration. Both groups showed no significant differences concerning body mass index, haemoglobin, serum creatinine, blood urea, serum uric acid, serum calcium, serum sodium, serum potassium, fasting blood sugar, postprandial blood sugar, HDL-c, plasma endothelin, arterial compliance , ejection fraction, left ventricular posterior wall and interventricular septum.

Comparison between different parameters between patients with BMI < 27 and BMI > 27 in the offspring and the hypertensive groups (Table -7)

Shows comparison between different parameters between patients with BMI <27 and BMI > 27 in the offspring and the hypertensive groups where the patients with BMI> 27 had significant higher plasma insulin, total cholesterol, LDL-c and LV mass and significant lower HDL-c compared to patients with BMI< 27 while the other parameters (p endothelin, microalbuminuria, p renin, norepinephrin, homosysteine and E/A ratio) showed no significant difference.

Correlation coefficient (r) between arterial compliance and different parameters in hypertensive and offspring groups (Table - 8)

Shows correlation coefficient between arterial compliance and different parameters in hypertensive and offspring groups, where both groups showed significant inverse correlation between arterial compliance and total cholesterol (r = - 0.321, - 0.382 , p<0.05) , triglycerides (r = -0.362 , -0.324 , p< 0.05) , LDL - c (r = -0.331, -0.311, p< 0.05), insulin (r= -0.532, -0.506 , p< 0.001) , renin (r = - 0.546, -0.588 , p< 0.001) , norepinephrine (r= -0.313 , - 0.218, p< 0.05), microalbuminuria (r = - 0.286, - 0.306, p< 0.05) , homocysteine (r = - 0.342 , - 0.261, p< 0.01, < 0.05) and LV mass (r = -0.421, -0.402, p< 0.01) but a positive correlation between arterial

compliance and ejection fraction (r= 0.426, 0.286, p< 0.01, 0.05) and LVDF (E/A ratio) (r= 0.443, 0.623, p< 0.01, 0.001) and insignificant positive correlation with HDL-c (r= 0.042, 0.064, p> 0.05).

Correlation coefficient between LV mass and different parameters in hypertensive and offspring groups (Table - 9)

Shows correlation coefficient between LV mass and different parameters in hypertensive and offspring groups, where both groups showed significant positive correlation between LV mass and total cholesterol (r= 0.383, 0.388, p< 0.05), triglycerides (r= 0.368, 0.358, p< 0.05), LDL-c (r= 0.568, 0.386, p< 0.001, 0.05), insulin (r= 0.681, 0.432, p< 0.001, 0.01), renin (r= 0.486, 0.521, p< 0.01, 0.001), norepinehrine (r= 0.388, 0.396, p< 0.05), microalbuminuria (r= 0.482, 0.521, p< 0.01, 0.001), homocysteine (0.442, 0.288, p< 0.01, 0.05) and endothelin (r= 0.521, 0.482, p< 0.001, 0.01). Both groups showed significant inverse correlation between LV mass and ejection fraction (r = - 0.286 , - 0.288, p< 0.05) and LVDF (r= -0.348, -0.488, p< 0.05, 0.01) and insignificant inverse correlation with HDL-c (r= -0.081, - 0.098).

Table (1): Clinical characteristics of the studied groups

		Control group (n = 30)	Offspring of HTN group (n = 50)	Hypertensive group (HTN) (n= 50)
Sex	F	17	19	27
	M	13	31	23
Age	Range	21-30	20-35	49-65
	Mean ±	25.4	28.0	56.2
	SD	2.76	4.67	4.7
BMI %	Range	21-30	21-30	21-30
	Mean ±	26.1	26.3	27.5
	SD	3.23	2.72	2.9
SBP mm Hg	Range	100-130	100-135	140-170
	Mean ±	118.0	118.4	157.5 ***, ###
	SD	6.9	8.36	7.8
DBP mm Hg	Range	70-80	70-80	90-110
	Mean ±	75.67	76.2	99.2 ***, ###
	SD	4.69	4.9	6.95
Ischemic Heart Disease		-	-	-	15

BMI = Body mass index
SBP = Systolic blood pressure
DBP = Diastolic blood pressure

*** $p<0.001$: Significant difference between HTN group and control group.
$p<0.001$: Significant difference between offspring and HTN groups.

Table (2): Biochemical parameters of the studied groups

		Control group (n = 30)	Offspring of HTN group (n = 50)	Hypertensive group (HTN) (n= 50)
S. creatinine mg/dl	Range	0.6-1.3	0.7-1.2	1.0-1.4
	Mean	0.95	0.96	1.15
	± SD	0.23	0.17	0.15
Blood urea mg/dl	Range	15-36	20-40	23-40 [**,#]
	Mean	28.07	30.7 a	34.12
	± SD	3.94	5.43	4.15
Hb (gm/dl)	Range	12-14.9	12.1-14.8	11.1-14.5
	Mean	13.48	13.52	12.79
	± SD	0.96	0.88	1.11
S. Ca Mg/dl	Range	8.6-10.5	8.3-10.3	7.8-10.6
	Mean	9.47	9.36	9.17
	± SD	0.65	0.68	0.76
S. Na mEq/l	Range	130-142	128-144	128-148
	Mean	135.87	135.34	138.3
	± SD	4.17	3.95	4.37
S. K mEq/l	Range	3.5-5.2	3.4-5.3	3.5-5.0
	Mean	4.32	4.37	4.32
	+SD	0.61	0.59	0.37
S. uric acid mg/dl	Range	3.0-6.8	4.0-7.2	5.0-8.5
	Mean	4.94	5.64 a	6.79 [*,#]
	± SD	1.16	0.88	0.89
F. blood sugar mg/dl	Range	80-115	80-120	88-122
	Mean	95.23	99.96	104.12 [*]
	± SD	10.84	11.86	9.54
P.P. blood sugar mg/dl	Range	120-155	120-150	138-150
	Mean	136.53	138.92	140.1
	± SD	10.77	7.39	6.52

[*] $p<0.05$, [**] $p<0.01$: Significant difference between HTN group and control group.

[#] $p<0.05$: Significant difference between offspring and HTN groups.

Table (3): Lipids profile in the studied groups

		Control group (n = 30)	Offspring of HTN group (n = 50)	Hypertensive group (HTN) (n= 50)
Total cholesterol (mg/dl)	Range	100-206	116-240	135-260
	Mean	143.53	170.62 @@	190.62 ***,#
	± SD	28.63	29.21	27.28
Triglycerides (mg/dl)	Range	54-152	72-278	84-290
	Mean	89.13	129.36 @@	141.4 ***,#
	± SD	26.59	47.68	49.68
HDL-c (mg/dl)	Range	46-56	38-55	36-49
	Mean	50.9	46.0 @	41.82 **,#
	± SD	3.29	4.19	3.8
LDL-c (mg/dl)	Range	44-133	44-175	66-196
	Mean	76.97	98.76 @	120.48 ***,##
	± SD	26.24	29.49	30.86

** p<0.01, *** p<0.001 :Significant difference between HTN group and control group

# p<0.05, ## p<0.01 : Significant difference between offspring and HTN groups.

@p<0.05, @@ p<0.01 : Significant difference between offspring and control groups.

Table (4): Specific biochemical parameters of the studied groups

		Control group (n = 30)	Offspring of HTN group (n = 50)	HTN group (n= 50)
Microalbumin -urea (ug/ml)	Range	1.7-22	2.8-167	13-425
	Mean	8.06	63.1 @@@	152.3 ***, ##
	± SD	5.98	37.19	114.92
Insulin (uIu/ml)	Range	3-19	5.4-58	6.8-68
	Mean	9.62	17.33 @@	20.82 ***
	± SD	4.31	11.74	12.73
Norepinephri ne (pg/ml)	Range	100-240	160-650	140-800
	Mean	163.67	352.2 @@@	374.6 ***
	± SD	39.35	96.01	146.01
Homocysteine ($u$mol/l)	Range	3.4-20	4.1-39	5.5-55
	Mean	10.79	13.94 @	16.21 **
	± SD	5.23	6.04	10.12
P. Endothelin (F mole/ml)	Range	0.5-2.3	0.98-3.2	0.98-4.3
	Mean	1.23	1.58	1.73 *
	± SD	0.419	0.47	0.525
U.Endothelin .pg/24 h	Range	73-224	51-224	43-192
	Mean	140.77	129.92 "	113.84 **
	± SD	35.308	40.35	32.75
Plasma renin concentration (pg/ml)	Range	19-46	18-162	19-230
	Mean	30.8	65.36 ??	86.34 ***, ##
	± SD	7.03	33.87	55.0

. Significant difference between offspring and HTN groups.

Significant difference between offspring and control groups.

Table (5): Doppler and echocardiographic parameters of the studied groups

		Control group (n = 30)	Offspring of HTN group (n = 50)	Hypertensive group (HTN) (n= 50)
Arterial compliance (AC) %/10 mm Hg	Range Mean ± SD	0.18-0.4 0.26 0.06	0.06-0.36 0.18 $^{a\,a}$ 0.07	0.05-0.32 0.134 $^{***,\#}$ 0.06
Left ventricular mass (LV mass) Gm	Range Mean ± SD	64-136 95.33 19.19	100-240 177.94 $^{a\,a}$ 36.9	108-340 226.54 $^{***,\#\#}$ 42.27
Interventricular septal thickness (IVST) mm	Range Mean ± SD	6-10 7.9 1.03	8-13 11.54 ^{a} 1.13	11-16 13.1 $^{**,=}$ 1.25
Left ventricular posterior wall thickness (LVPWT) mm	Range Mean ± SD	6-11 8.07 1.31	8-13 11.48 ^{a} 1.18	9-16 12.82 $^{**,=}$ 1.51
Left ventricular diastolic diameter (LVDD) mm	Range Mean ± SD	35-45 38.5 2.6	36-47 40.0 2.4	37-48 41.1 2.1
Left ventricular diastolic function	E wave A wave E/A	92.33±4.7 59.27±4.6 1.56±0.12	84.94±3.0 ^{a} 74.94±3.0 $^{a\,a}$ 1.133±0.12 ^{a}	64.2±3.1 $^{**,=}$ 76.84±3.2 ** 0.84±0.13 $^{*,=}$
Left ventricular systolic function (EF)	Range Mean ± SD	52-68 60.0 4.39	46-68 59.0 4.22	37-64 46.9 $^{**,==}$ 5.32

E wave = Early peak diastolic filling
A wave = Late peak diastolic filling
EF = Ejection fraction

* p<0.05 ** p<0.01,***p<0.001 :Significant difference between HTN group and control group
# p<0.05, ##p<0.01 : Significant difference between offspring and HTN groups.
a p<0.05, a a p<0.01 :Significant difference between offspring and control groups.

Table (6): Comparison of different parameters between hypertensive patients with and without ischemic heart disease (IHD)

	With IHD (n =15)	Without IHD (n =35)
Age	59.5 + 4.2	*54.8 + 4.3
Systolic Blood Pressure	162.3 ± 5.6	*155.4 ± 7.8
Diastolic Blood Pressure	102.7 ± 5.9	*97.7 ± 6.5
Body Mass Index	26.3 ÷ 3.2	26.6 + 2.8
Blood picture	12.4 − 1.1	13.0 + 1.1
S.Creatinin	1.2 − 0.2	1.2 ÷ 0.2
Bl. Urea	33.5 − 4.9	34.4 ÷ 3.9
S. uric acid	6.7 − 0.7	6.8 ÷ 1.0
S. Ca	9.2 − 0.8	9.2 + 0.7
S. Na	140.4 − 4.7	137.4 − 3.9
S. K	4.3 − 0.4	4.3 − 0.4
F. Bl. Sugar	104.3 − 9.0	104.0 + 9.9
P.P. Bl. Sugar	139.7 − 7.9	140.5 ÷ 6.0
Total Cholesterol	194.1 − 27.7	*189.1 + 30.1
HDL-c	42.9 − 2.9	41.4 + 4.1
LDL-c	124.0 − 30.0	*119.0 ÷ 31.5
Triglycerides	135.3 − 51.0	*144.0 − 49.6
Microalbuminurea	262.7 − 112.5	**105.0 − 78.3
Insulin	22.4 − 10.2	*18.2 ÷ 11.8
Norepinephrine	388.7 − 169.4	*368.6 ÷ 137.1
Homocysteine	17.5 − 10.6	*13.9 ÷ 10.0
P. Endothelin	1.7 − 0.4	1.7 ÷ 0.6
U. Endothelin	133.3 − 32.4	*105.5 − 29.6
Renin	91.9 − 66.2	*84.0 ÷ 50.4
LV mass ، ٠	232.2 − 27.9	*213.3 ÷ 46.3
Arterial Compliance	0.1 − 0.1	0.1 ÷ 0.1
Ejection Fraction	46.8 − 4.8	46.9 − 5.6
LVPWT	12.1 − 1.0	13.1 ÷ 1.6
IVST	12.5 − 1.1	13.3 + 1.2
E/A ratio	0.82 − 0.12	0.86 ÷ 0.12

* p‹ 0.05, ** p‹0.01

Table (7):Comparison of different parameters between patients with BMI
< 27 and patients with BMI > 27 in offspring and hypertensive
groups.

	Offspring group		Hypertensive group	
	BMI <27 (n= 17)	BMI > 27 (n=33)	BMI <27 (n= 28)	BMI > 27 (n=22)
Insulin	12.3 ± 10.7	22.4 ± 12.8	14.8 ±10.7	26.0 ± 14.1
Total cholesterol	160.2 ± 22.4	181.2 ±32.6	175.4 ± 24.2	205.2 ± 29.8
Triglycerides	119.4 ± 34.6	139.2 ±49.2	122.4 ± 41.6	160.2 ± 45.8
HDL-c	53.1 ± 3.2	39.2 ±5.2	44.6 ± 2.6	38.8 ± 3.8
LDL-c	78.8 ± 26.2	118.4 ±31.2	102.2 ± 28.4	138.6 ± 32.4
LV mass	168.0 ± 38.2	188.0 ±38.2	206.5 ± 43.2	246.6 ± 40.2
E/A	1.133 ± 0.12	1.131 ±0.12	0.86 ± 0.12	0.82 ± 0.14
Microalbuminurea	61.6 ± 38.1	65.2 ± 36.2	149.8 ± 104.9	157.2 ± 114.9
P. Endothelin	1.48 ± 0.56	1.68 ± 0.64	1.62 ± 0.44	1.84 ± 0.58
Plasma Renin Conc.	69.4 ± 34.8	68.8 ± 32.9	87.6 ± 52.0	88.4 ± 56.0
Norepinephrin	346.6 ± 90.1	358 ± 98.4	368.6 ± 148.2	372.2 ± 144.2
Homocysteine	15.8 ± 6.2	11.8 ± 6.0	18.2 ± 8.2	14.2 ± 10.2

* p<0.05, ** p<0.01, *** p<0.001

Table (8): Correlation coefficient (r) between Arterial Compliance and different parameters in hypertensive and offspring groups

	Parameter	HTN group	Offspring group
Arterial Compliance (AC)	Cholesterol	-0.321*	-0.382*
	Triglycerides	-0.362*	-0.324*
	LDL-c	-0.331*	-0.311*
	HDL-c	0.042	0.064
	Insulin	-0.532***	-0.506***
	Renin	-0.546***	-0.588***
	Norepinephrine	-0.313*	-0.218*
	Microalbuminuria	-0.286*	-0.306*
	Homocysteine	-0.432**	-0.261*
	Endothelin	-0.098	-0.211*
	LV diastolic function (E A)	0.443**	0.623***
	LV mass	-0.421**	-0.402**
	Ejection Fraction	0.426**	0.286*

* p<0.05, ** p<0.01, *** p<0.001

Table (9): Correlation coefficient (r) between left ventricular mass and different parameters in hypertensive and offspring groups

	Parameter	HTN group	Offspring group
Left Ventricular mass (LV mass)	Cholesterol	0.383*	0.388*
	Triglycerides	0.368*	0.358*
	LDL-c	0.568***	0.386*
	HDL-c	-0.081	-0.098
	Insulin	0.681***	0.432**
	Renin	0.486**	0.521***
	Norepinephrine	0.388*	0.396*
	Microalbuminuria	0.482**	0.521***
	Homocysteine	0.442**	0.288*
	Endothelin	0.521	0.482**
	LV diastolic function (E/A)	-0.348*	-0.488**
	Ejection Fraction	-0.286*	-0.288*

* p<0.05. ** p<0.01. *** p<0.001

Fig. (4) Total Lipids Profile (mg/dl) concentrations in the studied groups
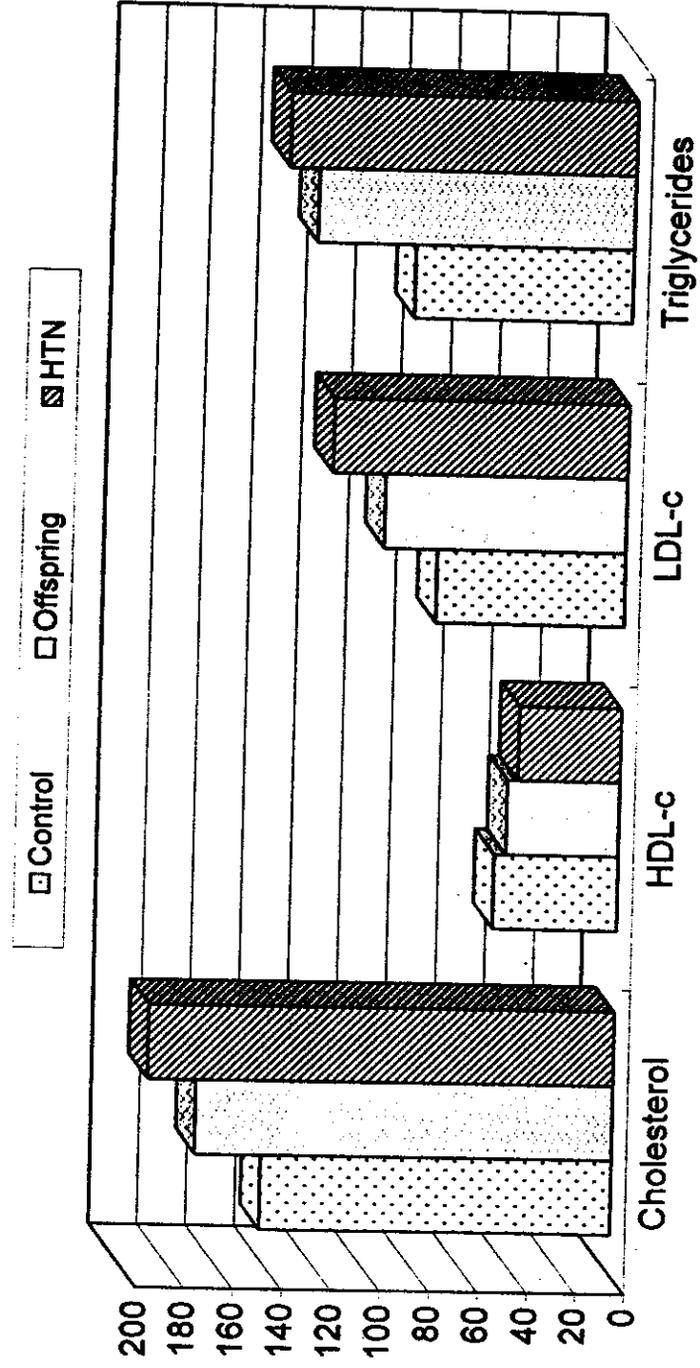
Fig. (5) Microalbuminurea concentration (_u_g/ml) in the studied groups
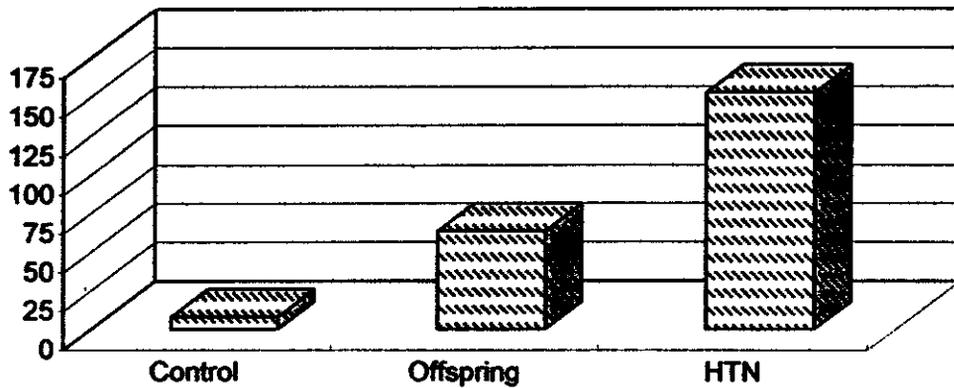
Fig. (6) Plasma Insulin (_u_IU/ml) concentrations in the studied groups
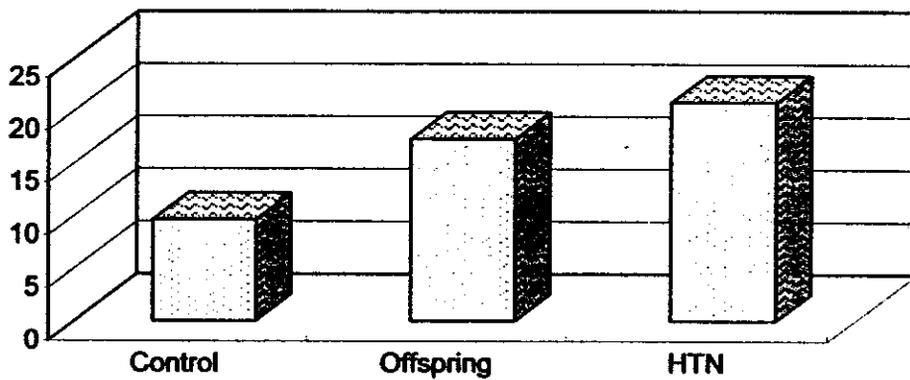
Fig. (7) Renin concentration (pg/ml) in the studied groups
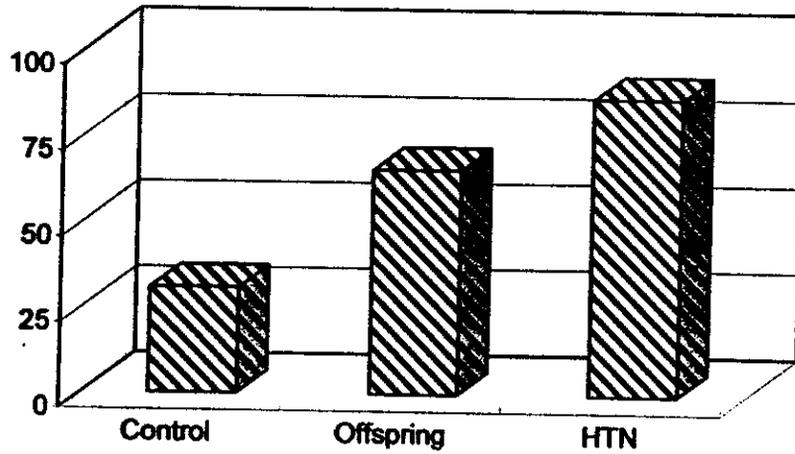
Fig. (8) Norepinephrine concentration (pg/ml) of the studied groups
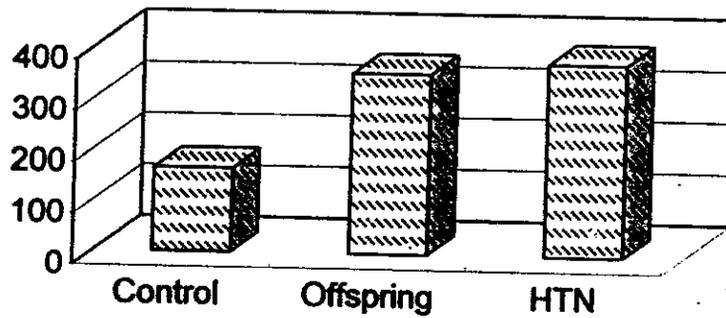
Fig. (9) Homosysteine (umol/l) concentrations in the studied groups
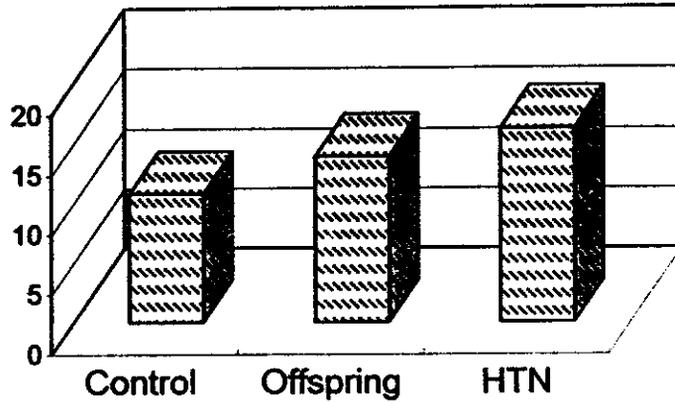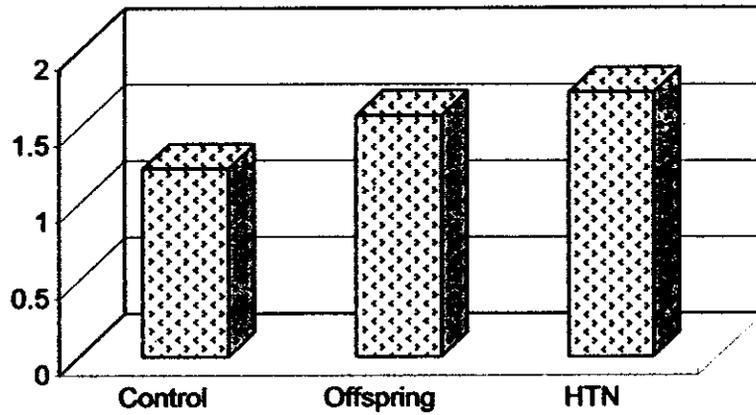

Fig. (10) P. Endothelin (F mole/ml) of the studied groups

Fig. (11) U. Endothelin (pg/24 h) of the studied
groups
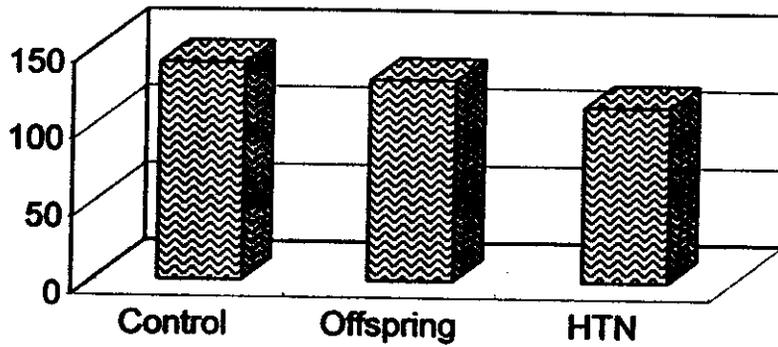
Fig. (12) Arterial compliance (% 10 mm Hg) in the
studied groups

☐ Control ☒ Offspring ☐ HTN
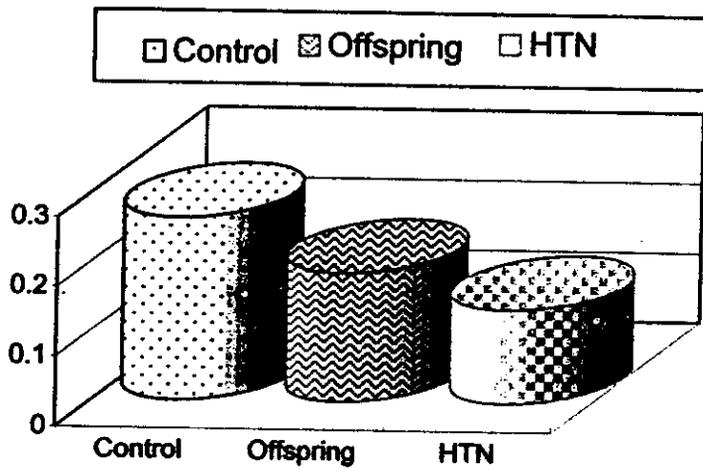
Fig. (13): IVST, LVPWT and LVDD (mm) in the studied groups

☐ Control ☒ Offspring ☒ HTN
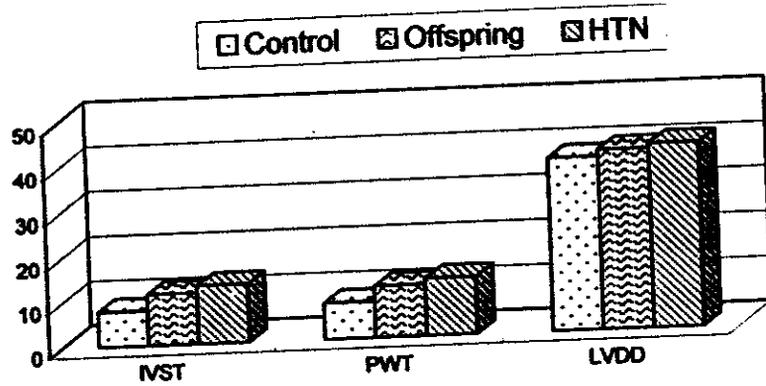
Fig. (14) Left Ventricular mass (gm) in the studied groups
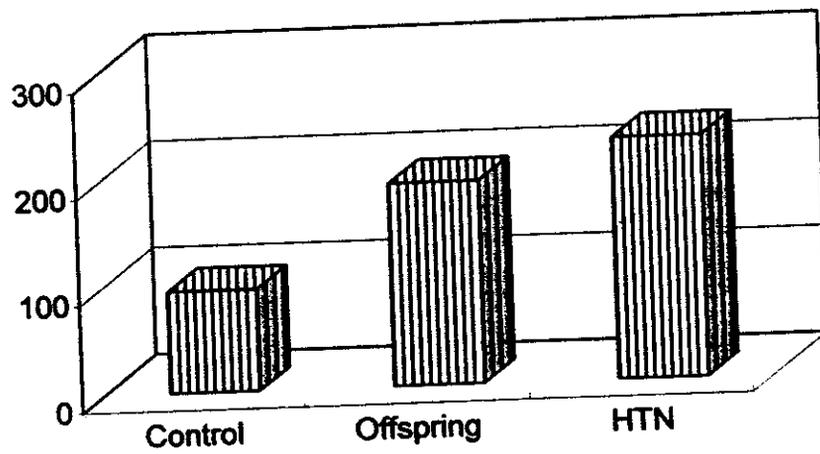
Fig. (15): Early and late peaks diastolic filling (E & A waves) (cm/s) in the studied groups
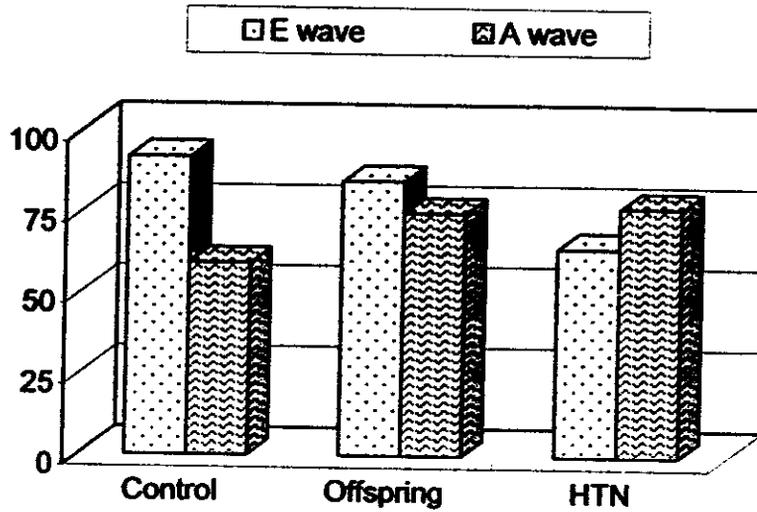

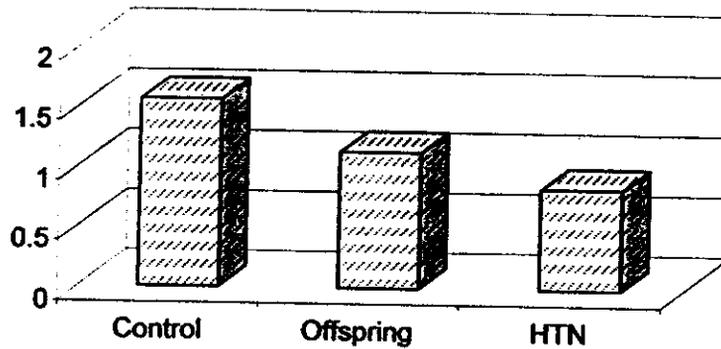☐ E wave   ☒ A wave

Fig (16) . E wave / A wave ratio in the studied group

Fig. (17) Ejection fraction (%) in the studied groups