

## HYPERTENSION RESULTING FROM USING BIRTHCONTROL PILLS IN ISFAHAN, IRAN

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### ABSTRACT

In a study on 685 healthy women who have been using Birth Control Pills for a period of about 27 months, the following results were found:

1. Blood pressure has been increased with a rate of 1.46%.
2. The increase in arterial blood pressure is on both the systolic and diastolic blood pressures.
3. It seems that hypertension results from the Estrogen which is present in the Pills.
4. This hypertension is not grave and with stopping the Pills within a maximum period of 5 months, blood pressure will return to its control level, without having any effect on the cardiac or renal function.
5. When noticing the above mentioned points, we can conclude that if a woman had previous hypertension after using Birth Control Pills, it is less dangerous than giving birth to a baby due to not using the Pills.

### INTRODUCTION

One of the best and most effective ways to prevent pregnancy is using Birth Control Pills, discovered and used since about 15 years ago.

On the other hand there are a lot of reports against using this method of prevention and scientists reported complications arising from using these drugs, such as Hypertension, reported for the first time by Wood in 1961,<sup>(1)</sup> and confirmed by others<sup>(2, 3)</sup>.

## MATERIAL AND METHODS

The investigation was conducted on 635 women who volunteered to be examined by the Medical Centers of the University of Isfahan in the past 27 months and who had been using Birth Control Pills. Applicants were chosen irrespective of any special characteristic. 98% of them came from the city of Isfahan; the rest (2%) from the suburban areas.

During the investigation 198 of these women claimed to have stopped using the Pills for different reasons as indicated in Tables 3 and 4. Our study then concentrated on the remaining 487 women.

Before starting our study, we examined the volunteers for different reasons which could have caused hypertension. All of the laboratory and clinic tests showed that they were completely healthy and they had regular menstruation and normal blood pressure.

The systolic and diastolic pressures were measured regularly every month for 27 months. Variations in blood pressures are shown in Graph No. II and Table No. 2.

Blood pressure was measured by the examining physicians using standardized mercury sphygmomanometers. Subjects were seated with their arms resting on a desk. Diastolic blood pressures were recorded at the point of disappearance of sounds. Body weight values were obtained during the same examination.

Blood pressure was measured first thing in the morning while they had been fasting and again four times during the day: the average was taken and this was repeated three times, before choosing the women for this investigation.

The women had been using Eugynon regularly from the 5th day of their menstruation through to the 27th day. They were examined twice a month and the taking of the pills was under very careful control.

Family history, heredity and other factors such as hormonal and psychological factors and diet were recorded so that the amount of Sodium Chloride in their diet was under control.

The E.K.G. and chest X-ray and skull X-ray together with the complete urinary test measuring the amount of Cathecolamine in urine before and after the study were done. These were within the normal ranges. During the study we again measured the blood pressure and weighed these women. If the blood pressure was increasing, we repeated the above mentioned tests and studied them in order to make sure that there could be no other reason for the increase. Therefore, we were convinced that the only ethiological reason for the increase had been the use of Birth Control Pills, and there was no correlation between development of hypertension and cardiac function or renal function during the use of the Pills.

Next we determined the type of hypertension in those women whose blood pressures were increasing, whether it was an increase in systolic pressure over 160 mm.Hg or diastolic pressure over 95 mm.Hg. These findings were recorded in the volunteer's file. We also recorded the time between the stopping of the Pills and the return of the blood pressure to its control level, together with any other changes, and the distribution of the age of the women examined in this research project.

## RESULTS

The results of this study are shown in Tables 1, 2, 3 and 4 and in Graphs I and II.

I. Table 1 shows the distribution and average age of the women and (one standard deviation) which was  $27 \pm 10.7$ . Most of them were between 25 and 35 years old.

II. Table 2 and Graph II show the control blood pressure; duration of the use of the Pills to obtain high blood pressure; the high blood pressure and the time which was necessary to get the blood pressure down to its control level. The first column of this table shows that the average age of the women which have high blood pressure (and one standard deviation) was  $35 \pm 4.7$  years old and this table indicates an increase in blood pressure in seven women.

The second column indicates the average systolic and diastolic pressures at the beginning of the study and (one SD) which were  $120 \pm 15$  and  $70 \pm 10$  mm.Hg. respectively. Also in this table we could see the time of using the pills to reach a high blood pressure after using the pills and the time after stopping to get to control the blood pressure. The mean systolic blood pressure had increased significantly from 11.85 mm.Hg. to 17.7 mm.Hg. in these women. Also the mean diastolic blood pressure had significantly increased from 6.85 mm.Hg. to 9.8 mm.Hg.

III. Table 3 shows the medical reasons why the taking of the Pills was stopped. This table shows that Neurosis has been the most common reason for stopping the pills.

IV. Table 4 shows the non-medical reasons for stopping the pills. It is very important to note that the main reason for the majority of persons stopping using the pills was because of reading or hearing that they are harmful in different ways.

In addition the average weight of the volunteers was  $59 \pm 8$  kg and as indicated in Graph I has not significantly changed during using the birth control pills or in the period of follow-up of these consumers.

## DISCUSSION

The studies done on this subject by different investigators are not the same and they have reported different results and conclusions. (4, 5, 6) Satura et al (6) and Crane and Harris (5) have reported 10% increase in hypertension during the use of the birth control pills which seems very high, at least in this country. Child (7) in 1970 and Smith (8) in 1972 have both reported the hypertension being 1% after using the birth control pills. In this investigation we found an increase of 1.47% in blood pressure. Later investigators reported a different time schedule from starting to take the pill until the time of getting high blood pressure (9, 10, 11).

Some reporters have indicated that this complication, in 90% of the consumers appears after three months of using the pills. However, in our investigation we found only one case in the first year after 11 months, and the rest in the second year (Table 2). Also they have reported the time which is necessary for the return of high blood pressure to its control level as about one year after stopping the birth control pills, but in our study this period of time has been a maximum of 6 months and the average has been 4 months (Table 2).

Also in this study we have found the following scientific points which differ from the other investigators' studies.

1. In older women the chance of getting hypertension is greater than in young women.
2. The increase in blood pressure which results from using the pills is not great and after a period of time reaches a maximum level that in our study was 175/105 then remains stable. Even with continued use of the pills it does not increase any more and it does not have any effect on the cardiac or renal function.

Some investigators (12 and 13) have indicated that estrogen is responsible for the increase in blood pressure and they believe that the stimulation of renin-angiotension mechanism and/or aldosterone, retention of sodium chloride, increase in anti-diuretic hormones and the stimulation of the sympathetic nervous system could increase the blood pressure (14, 15, 16, 17). These data suggest that developing hypertension is due to estrogen which exists in the birth control pills.

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**Table 1**  
**Distribution of the age of the women that have been using the birth control pills**

Number	Age (years)
76	15-20
93	20-25
115	25-30
104	30-35
71	35-40
28	40-45

**Table 2**  
**This table shows the high blood pressure during the use of birth control pills**  
**and the time necessary to get the hypertension**

Name	Age in Years	Control blood Pressure	Time of using pills to reach high blood pressure (months)	Blood pressure after using pills	Time after stopping pills to get to control blood pressure (months)
N.M.	30	110/65	16	165/95	4
A.M.	38	130/70	13	170/95	3
D.A.	31	120/70	14	175/100	3
S.Y.	35	130/65	13	170/95	5
N.I.	40	130/70	13	175/105	3
F.K.	42	120/75	11	175/100	6
M.D.	32	110/65	15	165/95	Has changed address and did not refer to clinic

Table 3

shows the medical reasons which caused stopping the pills.

No.	Medical Causes	No. of Women
1.	Nevrueses	21
2.	Excessive menstrual bleeding	18
3.	Choloasma	17
4.	Vomiting and nausea	15
5a.	Tachycardia	13
5b.	Headache	13
6.	Oligomenorrhea	11
7.	Vaginal hypersecretion	9
8.	Drug reaction	8
9.	Obesity	6
10.	Pregnancy with using the pills	3

Table 4

shows the non-medical causes for not using the pills.

No.	No. of Persons	Causes
1.	17	In different ways they have read or heard that the birth control pills are harmful.
2.	15	Travelling to far areas.
3.	13	No reason
4.	8	Tendency to be pregnant again
5.	6	Tendency to change the method
6.	5	Disagreement of husband



Figure No. 1

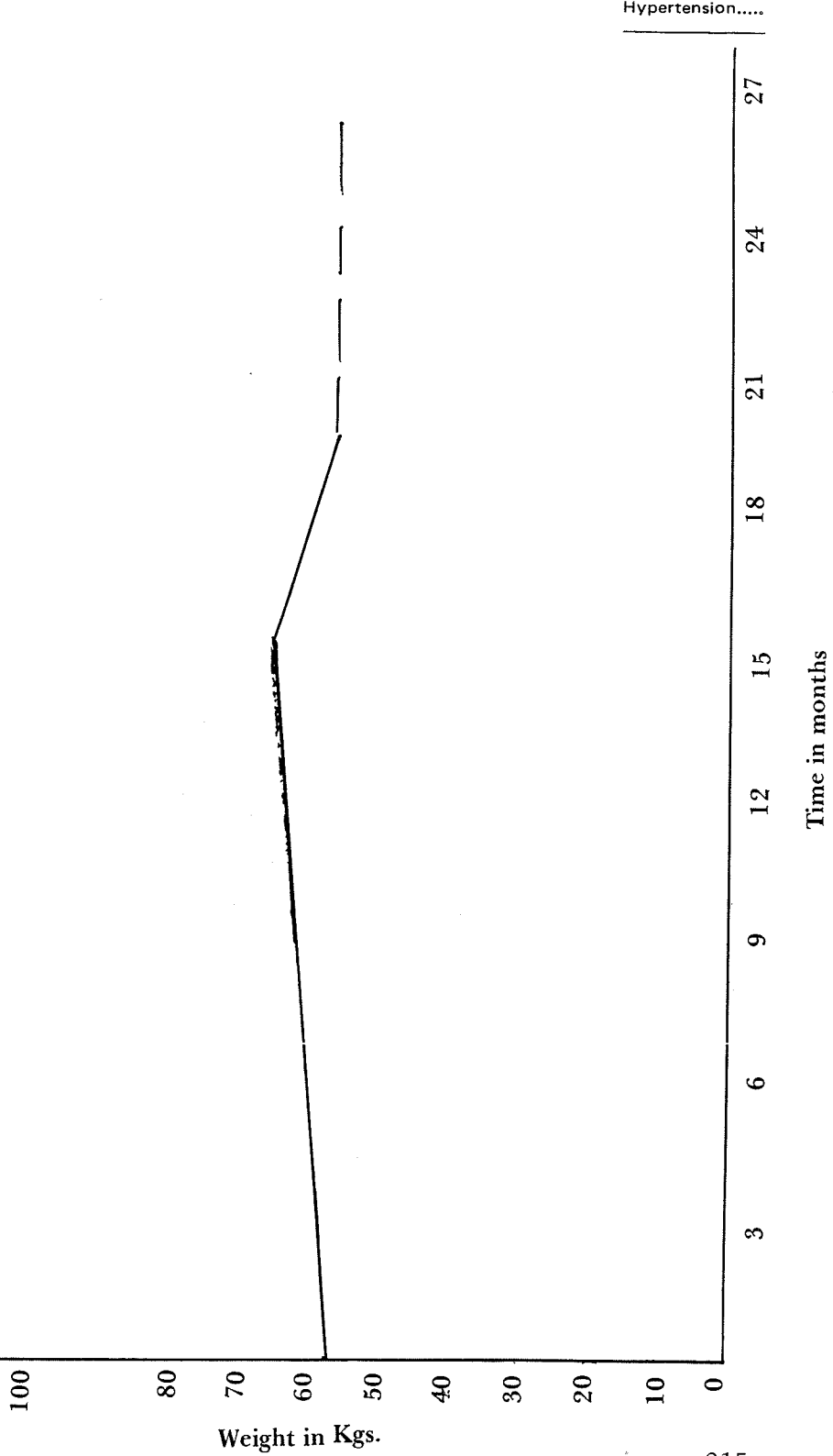


Figure No.2

