

## Association Between the Use of Depot Medroxyprogesterone Acetate and Lumbago

<sup>1</sup>F. Mohhamadi, <sup>2</sup>Z. Safdari, <sup>3</sup>Dr H. Jahani Hashemi, <sup>4</sup>F. Ghodsi

<sup>1,2</sup>Instructor and the member of midwife scientific committee of Qazvin University OF Medical Science.

<sup>3</sup>Member of scientific committee of department of biostatistics, Qazvin University OF Medical Science.

<sup>4</sup>Graduated from Qazvin University. Nursing and midwifery faculty, Qazvin University OF Medical Science, Qazvin, IRAN.

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**Abstract:** Depot Medroxyprogesterone Acetate (DMPA) or depo-provera is one of the most effective birth control methods, as more than 9 million women are using it around the world. Although, Depo provera has a number of advantages as a contraceptive agent but like all other medications, it has some potential side effects. One of probable complications of DMPA that hasn't pointed in family planning texts yet, is lumbago. However, bone mass density reduction as one of the serious complications of DMPA is demonstrated, of course it has no symptom until bone fracture. This study was done to assess the association between use of Depot Medroxyprogesterone Acetate and lumbago among women. The result of this study indicates that DMPA relates with lumbago statistically on the total of stages (stage one: P= 0.009, stage two: P= 0.02 and stage three: P= 0.005). According to the findings there was statistically association between DMPA and lumbago. With due attention to that one of the most effective birth control is DMPA it is not logical that it would be restricted and so it can be use with general principles regards.

**Key word:** Depot Medroxyprogesterone Acetate, lumbago

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### INTRODUCTION

Presently, the population growth is one of the main human problems which have undesirable effect on human life in all aspects. On the contrast, the balanced growth of population causes more desirable economic status of the people and so, they will better enjoy possibilities and facilities. In recent years, there were widespread activities on the contraceptive methods around the world (Zargang, A., P. Hashemi, M. Fallahin, 1999).

One of the contraceptive methods is Depot Medroxyprogesterone Acetate (Bakr, S., 2008; Glasier A., Y. Yan, K. Wellings, 2007; Kaunitz, A.M., 2000) which is usually injected one time at 3 month intervals in 150 mg dose deeply in the muscle of the upper part quarter of buttocks or in the arm without massage (Jafari, N., Sh. Kaviainpour, S. Khoshbin, Chi. Arshin, *et al*, 2004). DMPA has been used since 1950 (Westhoff, C., 2003) and as one of the contraceptive methods in birth control since early 1960. After a while, its use was ceased due to the possible side effects after which it was advised once again following World Health Organization (WHO) research (Paul, Ch., D.C.G. Skegg, S. Williams, 1997). In 1992 Food and Drug Administration (FDA) of United States of America (USA) approved its consumption (Khoiny, F.E., 1996; Connor, P.D., *et al*, 2002). DMPA was consumed since 1967 in over than 90 countries by millions of the women (Black, A., 2006). Up to 1994 it was decreased to 30 millions (Facts about injectable contraception, 1994), in 2000 to 13 millions (Biennial Report reproductive research WHO Geneva, 2000) and up to June 2008 to 9 millions women. At present, the most consumers of DMPA are in USA and Great Britain of which mostly are teens (Walsh, J.S., R. Eastell, N.F., Peel, 2008). In Iran (1995), DMPA was put in the health centers list and since 1996 a few women consumed it (Hajikazemi, A., S. Nikpur, H. Haghani, 2003).

WHO in its 2000 report on the reproduction issue has pointed out that although DMPA have High effect in contraception but due to side effects, its discontinuation was considerable. To this end, the researchers are seeking for more suitable substitution (Biennial Report reproductive research WHO, 2000). DMPA side effects were indicated as menstruation disorder, depression, overweight, headache, decrease of sexuality, susceptibility

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**Corresponding Author:** F. Mohhamadi, Instructor and the member of midwife scientific committee of Qazvin University OF Medical Science.  
E-mail: mohammadi1508@gmail.com

of the breasts, flatulence, decrease of Bone Mineral Density (BMD), abdominal and pelvic cramps, loss of hair or decrease of its growth, weariness, insomnia and emerge of breast cancer (Aktun, H., *et al*, 2005; Jafari, N., Sh. Kaviainpour, S. khoshbin, Chi. Arshin, *et al*, 2004; Matson, S.C., *et al*, 1997).

The most serious DMPA effect is loss of the BMD (Scholes, D., 2002). The this end, USA FDA has warned on DMPA consumption on Nov.2004 in which decrease of the bone mineral density is increased by duration of its consumption And even after discontinuation would be likely irrevocable. Based on this data, USA FDA recommended that DMPA should not be consumed more than 2 years unless other methods are inappropriate (Cromer, B.A., *et al*, 2006). On the other hand, in 20 June 2005 WHO announced that DMPA decreased the peak bone mass in the women and caused disorder in the bone mineral obtain in those women who have not reached to peak bone mass (<http://www.who.int/reproductive-health/familyplanning/bonehealth.htm/>).

Lumbago is amongst side effects of contraceptive injection, but so far it was not considered in the birth control texts. In some of the researches carried out in Iran, lumbago was considered as side effect or one of the reasons of discontinuation (FallahNejad, H., M.H. Lotfi, 1995; Hajikazemi, A., S. Nikpur, H. Haghani, 2003). In the English texts, it was not referred as an independent issue but just mentioned bone density decrease and possible osteoporosis which it has no symptom before fracture of a bone (Mcilwain, H., B.D. Fulghum, 2002).

Lumbago followed by DMPA injection may be occurred as a result of overweight especially among the teens, which would result in spinal harm in such a way that the waist would become hollow for the reason of protrusive venter. At first, it begins with pain in the pelvis and knees and gradually adverse and chronic lumbago (Shiri R., *et al*, 2008). Anyway, According to birth control on Department of the Ministry of Health, Treatment and Medical Training in Iran, lumbago due to DMPA consumption was seen just in a few provinces amongst Qazvin. The research was carried out with the objective of determination of relationship between DMPA injection and lumbago among the women in the Qazvin province.

## **MATERIEL AND METHODS**

This analytical and prospective survey was done in 2007-2008 in which 150 women using DMPA for contraception (Case Group) and 150 women using other contraception methods (Control Group) referring to health centers in Qazvin were participated. The women who have had at least four successive DMPA injection formed case group and the women who have applied other contraceptive methods for one or more than one year formed control group. All the women who their lumbago were as a result on orthopedic disease or bone metabolism as well as those with family history of osteoporosis were taken out. Both Groups were matched in terms of some variables (age, prior weight, number and kind of parities).

The data collection approach was interview through questionnaire which was formulated in three stages. The first stage was composed of two sections. The first section comprised 12 questions on some of the individual characteristics of the women (age, number of pregnancies, parity and abortion, job and kind of parity), type and duration of prior and present contraception, present weight and weight before contraception and the second section comprised 5 questions on occurrence and time of lumbago, consult a physician, diagnosis and type of treatment. The questions of the second and third stages of the questionnaire, each one comprised of five questions, were similar to the second section of the first stage. Mean while, the criterion of lumbago was in the form of Yes/No.

After selection of the health centers and qualified persons and also women satisfaction, the questionnaire of the first stage was completed by questioners. After completion; the case and control groups were followed up in two times at three month intervals. In this way, the questions on lumbago as well as other relevant questions were again asked during second and third stage's questionnaire. The collection of the samples was lasted about 12 months. On the whole, from 470 questionnaires distributed in the health centers, 364 questionnaires were returned of which 64 ones were taken out due to various reasons and finally Analyzing 300 questionnaires were performed.

The data analysis was done according to the description statistics and also statistical tests (chi-Square, t-test and McNemar). Also Odds Ratio was measured. We used SPSS software for our data analysis.

## **RESULTS AND DISCUSSION**

The average age of the women in both groups was  $31.24 \pm 7.25$ . The youngest and the oldest one were 18 and 52 respectively. The average parities in both groups were  $2.17 \pm 1.34$ . The findings show that overweight in the case and control groups was nearly identical (2.37 kg for case group and 2.28 kg for control group).

Degree of lumbago in the first stage between case and control group was 26% and 14% respectively in which chi-Square statistical test with  $p=0.009$  showed meaningful statistical difference between two groups. Degree of lumbago in the second stage between case and control group was 22% and 12% respectively in which chi-square statistical test with  $p=0.02$  showed meaningful statistical difference between two groups. Degree of lumbago in the third stage between case and control group was 22.7% and 10.7% respectively in which chi-Square statistical test with  $p=0.005$  showed meaningful statistical difference between two groups (Table 1).

**Table 1:** Rate of lumbago in case and control group

Stage	Lumbago	Case		control		Total	
		Number	percent	Number	percent	Number	percent
1	No	111	74	129	86	240	80
	Yes	39	26	21	14	60	20
	Total	150	100	150	100	300	100
Test result		$\chi^2=6.750$		df=1		P=0.009	
*CI:( 1.199-3.886) ** OR: 2.158							
2	No	117	78	132	88	249	83
	Yes	33	22	18	12	51	17
	Total	150	100	150	100	300	100
Test result		$\chi^2=5.315$		df=1		P=0.021	
CI:( 1.106-3.868) OR: 2.068							
3	No	116	77.3	134	89.3	250	83.3
	Yes	34	22.7	16	10.7	50	16.7
	Total	150	100	150	100	300	100
Test result		$\chi^2=7.776$		df=1		P=0.005	
CI:( 1.289-4.674) OR: 2.455							

\*Confidence Interval, \*\*Odds Ratio

Odds Ratio in the all stage showed that the chance of suffering in the case group has been more than control group. Using McNemar test, the variation in the answers in relation to the lumbago in the both groups at all stages was not meaningful.

Regarding present contraceptive method, the highest degree of lumbago in the first stage is 26%. Lumbago in respect to the prior contraceptive method showed different conclusion so that the highest degree of lumbago (39.4%) was seen in LD contraceptive pill consumers.

### DISCUSSION AND CONCLUSION

The results demonstrated that lumbago at the all stages with DMPA has meaningful relationship. In a research, Reasons for Discontinuation of DMPA among Women in Tehran showed that musculoskeletal problems (knee ache, podalgia, lumbago etc.) were 16.89% of the reasons (Hajikazemi, A., S. Nikpur, H. Haghani, 2003). In the other study on the DMPA side effects, showed that 6.2% of the side effects were related to lumbago, while regarding the effective factors in dissatisfaction of this method, lumbago allocated 69% (FallahNejad, H., M.H. Lotfi, 1995).

Both researches were performed on DMPA side effects and/reasons for discontinuation in which it showed that the women who consumed DMPA complained against lumbago, though the relationship between these variables was not proceeded. In the birth control texts, lumbago was not pointed out as DMPA side effects, though; this issue is applicable for other contraceptive methods (Jafari, N., Sh. Kaviainpour, S. Khoshbin, Chi. Arshin, *et al*, 2004).

In a study most of the women who were consuming DMPA, used prior LD contraceptive (Zargang, A., P. Hashemi, M. Fallahin, 1999). In other research, the clinical-individual characteristics and experience of Turkish women who consumed DMPA was studied in which the results showed that the highest degree of the prior contraceptives (30%) belonged to the women using withdrawal method, and consuming LD contraceptives (23%) was in the second priority (Aktun, H., *et al*, 2005).

It seems that if at the present study the samples were becoming harmonious in prior contraceptive methods or the women who were put in the case group have not used any form of contraceptive, the results became different. In the most studies the control group was those women who have not any prior contraceptive methods and even it was applicable for the case group that have used this method for the first time (Beksinska, M.E., *et al*, 2005; Clark, M.K., M. Sowers, B. Levy, S. Nichols, 2006). Even in some surveys the duration of the contraceptive method has become harmonious in various groups (McGough, P., A. Bigrigg, 2007).

The considerable point in present study was that in the higher stages, the rate of lumbago in the case and control group decreased with which the researchers suppose that it might be due to the low careless of the women to the issue. It seems that if the pain degree has been surveyed on the basis of certain measurement criteria, various results were achieved.

In this survey, the average age of the women in both groups was  $31.24 \pm 7.25$ . Many researches were carried out on the age of DMPA consumers with which in the most cases was between 17-52 years old. In the most researches average age of the women were  $31 \pm 8.9$  years old (Albertazzi, P., M. Bottazzi, S.A. Steel, 2006; ; Gbolade, B., *et al*, 1998; Hajikazemi, A., S. Nikpur, H. Haghani, 2003; Paiva, L.C., A.M. Pinto-Neto, A. Faundes, 1998; Zargang, A., P. Hashemi, M. Fallahin, 1999).

The average age of the women in the survey was very close to other researches but neither has studied lumbago in various age groups. Mostly, bone mineral density was studied in DMPA consumers. In this regard, many papers have pointed out decrease of density in different ages, specifically over 35 years old and below 18 years old (Busen, N.H., R.B. Britt, N. Rianon, 2003; Cromer, B.A., *et al*, 2008; Kass-Wolff, J.H., 2001; Paiva, L.C., A.M. Pinto-Neto, A. Faundes, 1998; Scholes, D., *et al*, 2002). We might justify lumbago on the basis of much studies performed on lower bone density in different age groups, though it was not pointed out in the birth control texts.

In this survey, overweight in both groups was approximately happened equally. One of the side effects in relation to DMPA consumption is overweight which ranks after menstruation disorder (Clark, M.K., J.S. Dillon, M. Sowers, S. Nichols, 2005; Paul, Ch., D.C.G., Skegg, S., Williams, 1997; Scholes, D., 2002). In a study, stated that the all fat measured in DMPA consumers compared with other women who have not consumed hormone contraceptive methods, have had meaningful increase ( $p=0.03$ ). The average age in DMPA consumers increased from 69.4 kg to 75.5 kg in 30<sup>th</sup> month. This proved that variation in the body composition (incline to higher fat increase and central distribution of fat increase) in the DMPA consumers is seen compared with other women (Clark, M.K., J.S. Dillon, M. Sowers, S. Nichols, 2005).

Harel and *et al* stated that DMPA consumption for one year increases their weight to 4-5 pound (Harel, Z. *et al*, 1996). In the present survey the average weight in both groups increased nearly equal which is matched with the study of many researchers (Harel, Z. *et al*, 1996; Zargang, A., P. Hashemi, M. Fallahin, 1999).

Regarding results on the present contraceptive methods, the highest lumbago belonged to DMPA consumers. And also, the most lumbago regarding prior contraceptive method occurred in LD contraceptive pill consumers. It seems that progesterone effects indirectly.

Progesterone causes aggregation of liquid in the body, appetite increase and more food stuff consumption and so leading to overweight (Jafari, N., Sh. Kaviainpour, S. Khoshbin, Chi. Arshin, *et al*, 2004). In a research, The average and range of overweight in the women consumed OCP was 5kg and 1-20 kg respectively in which it showed that 27% of OCP consumers became overweight (Oddens, B.J., 1999). The prior studies by Oddens *et al*, reported that the range of overweight in OCP consumers was 59-73% (Oddens, B.J. 1996; Oddens, B.J., 1999; Oddens, B.J., A.P. Visser, H.M. Vemer, W.T.A.M. Everaerd, 1994; Oddens B.J., I. Milsom, 1996).

In the birth control texts, relation between lumbago and DMPA and other contraceptive methods was not pointed out. It was just stated by WHO that DMPA has decreased BMD in the women who have gained peak bone mass and caused disorder of bone mineral gain in the women who have not yet gained peak bone mass (Biennal Report reproductive research WHO, 2000).

Although, many studies have shown relation between DMPA and decrease of BMD (Beksinska, M.E., *et al*, 2005; McGough, P., A. Bigrigg, 2007), but regarding the following principles based on WHO, its effect on body bone mass might be prevented:

- 1- Continuation of DMPA consumption in the women aged 18-45 and who are qualified to its consumption should not be restricted.
- 2 The advantages of DMPA consumption during adolescent (beginning of menarche to 18 years old) and over 45 years old is more than the theories on its bad effects on BMD. Regarding limited data on relation of DMPA and fracture of bone in these age groups, the advantages and disadvantages of long term consumption of these methods should be measured individually and over the time (Biennal Report reproductive research WHO, 2000).

**Recommendations:**

Regarding the results and surveys, the researchers recommend that to complement knowledge on the subject matter, the following measures should be taken:

- 1- Study relation between lumbago and DMPA regarding BMD.
- 2- Study on lumbago relation with DMPA in teens on the basis of BMD Measurement.
- 3- Study on lumbago relation in menopausal women who have prior DMPA consumption.
- 4- Comparison between BMD in the DMPA users in various age groups on the basis of lumbago or its lack.

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