

Research Article

Weight Gain with the Levonorgestrel-Releasing Intrauterine System (LNG-IUS) Versus Depot Medroxyprogesterone Acetate (DMPA) Among Post-Partum Adolescents through 12 Months of Follow-up

David L Howard*, Patty Orme and Julie L Strickland

Department of Obstetrics and Gynecology, University of Missouri-Kansas City, USA

*Corresponding author: David L Howard MD PhD, Department of Obstetrics and Gynecology, Joint Base Langley-Eustis, USA

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Abstract

Objective: To explore trends in weight gain among post-partum/parous adolescents using either DMPA or the LNG-IUS.

Materials and Methods: Secondary analysis using data from a longitudinal survey of 66 post-partum/parous adolescents choosing either DMPA or the LNG-IUS as their method of contraception.

Results: At 3, 6 and 12 months of follow up there was no statistically significant difference in weight gain between DMPA and LNG-IUS users. There was an association between weight gain at 3 and 6 months, respectively, and weight gain at 12 months.

Conclusions: Further studies are needed to validate the intriguing findings of this small study.

Keywords: Weight gain; Post-partum; Adolescents; Levonorgestrel-releasing intrauterine system; Depot medroxyprogesterone acetate

Introduction

Adolescents' concern about weight gain can discourage initiation or lead to early discontinuation of hormonal contraception thereby increasing the risk of rapid repeat pregnancy. There is limited head to head data on the weight gain associated with DMPA as compared to that associated with the LNG-IUS specifically among post-partum/parous adolescents. The primary aim of this study was to conduct a secondary analysis of data from a prior study by Howard et al. [1] to compare the trend in objective weight gain with DMPA compared to the LNG-IUS among post-partum/parous adolescents over 12 months of follow-up. A secondary aim of this study was to explore whether the relationship between early weight gain and later weight gain, previously well described among adolescent users of DMPA [2,3], also holds when the study population contains a significant proportion of adolescent LNG-IUS users.

Materials and Methods

Overview

This study is a secondary analysis using data from a prospective and longitudinal survey of post-partum/parous adolescents (aged 20 and younger) choosing either DMPA or the LNG-IUS as their method of contraception and the detailed methods are published in that paper [1]. Each time participants physically presented to our clinic their weight was recorded and so for DMPA users and LNG-IUS users there was serial weight data across the study period. For adolescents who did not present serially for scheduled visits within the study period we searched their medical records for any unscheduled emergency room visit or any scheduled visit to another clinic within

our hospital. We then looked to see if their weight was recorded at that visit and then searched their gynecology clinic physician and nursing notes to see if they were still using their chosen method at that time. This strategy allowed us to minimize missing data. Despite our best efforts however, there was difficulty with loss to follow up in this study and by 12 months of follow-up we were only able to find weight data on 27 out of the 66 women who initially consented to participate in this longitudinal study.

Statistical analysis

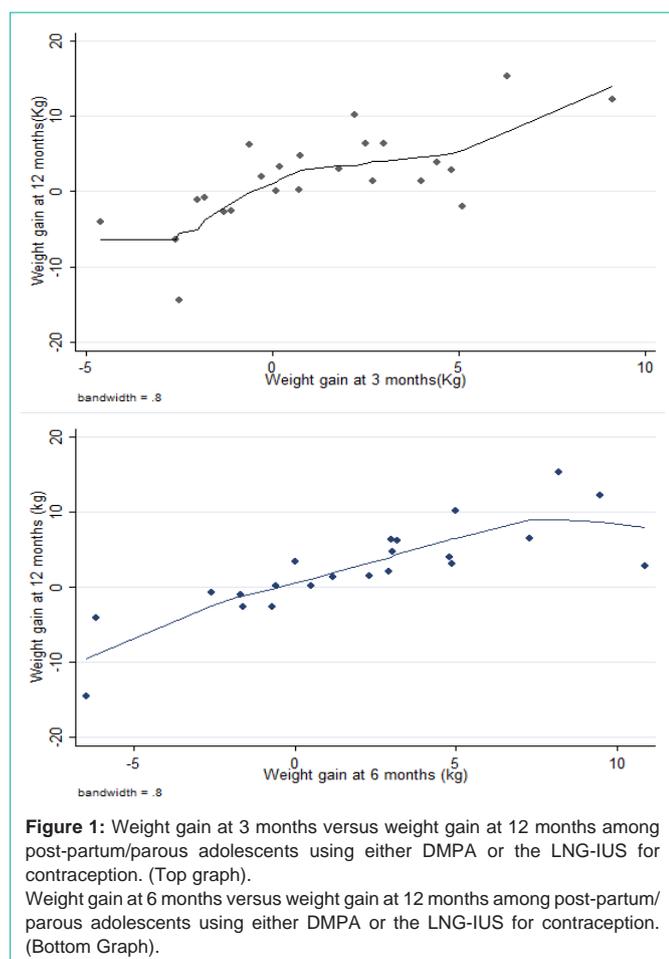
Using weight (in kg) at study enrollment as the baseline weight we compared mean weight gain for postpartum/parous DMPA users and LNG-IUS users at 3, 6 and 12 months of follow-up using both the student's T-test and the Wilcoxon rank-sum test. P-values less than 0.05 were considered statistically significant. We plotted weight gain at 12 months against weight gain at 3 months, and then separately against weight gain at 6 months using the Lowess smoothing procedure within STATA (Stata Corporation, College Station, TX). We then conducted a simple linear regression of weight gain at 12 months as a function of weight gain at 3 months, and then separately as a function of weight gain at 6 months. We chose these simple (unadjusted) statistical measures because our sample size was modest and by 12 months we only had weight data on 27 out of the 66 women who enrolled in the study.

All analyses were carried out using STATA version 8 (Stata Corporation, College Station, TX). This study was approved by the Institutional Review boards at the Truman Medical center and the University of Missouri Kansas City.

Table 1: Weight gain with the levonorgestrel-releasing intrauterine system (LNG-IUS) versus depot medroxyprogesterone acetate (DMPA) among post-partum adolescents at 3, 6 and 12 months of follow up.

	DMPA Mean (95% CI)[kg]	LNG-IUS Mean (95% CI) [kg]	p-value*
Baseline weight	70.24(63.30, 77.18) [N=29]	75.34(69.35, 81.34) [N=37]	0.26
Weight change			
3 months-baseline	1.21(-0.27,2.68) [N=26]	0.85(-0.37,2.07) [N=27]	0.70
6 months-baseline	1.11(-1.10,3.31) [N=20]	0.61(-1.97,3.18) [N=18]	0.76
12 months-baseline	3.76 (-0.60,8.11) [N=9]	0.20(-3.31,3.71) [N=18]	0.20

*student's T test used to compare baseline weight and mean weight gain at each time point.



Results

At baseline there were 37 adolescents in the LNG-IUS group with mean weight of 75.34kg and 29 adolescents in the DMPA group with mean weight of 70.24kg. The differences in weight gain between the two groups were not statistically significant at any time point using either the student's T test or the Wilcoxon rank sum test (Table 1). Using the Lowess smoothing procedure a positive association can be appreciated graphically between early weight gain at 3 months and 6 months, respectively, and weight gain at 12 months (Figure 1). This is one of the first demonstrations of the relationship between early weight gain and later weight gain in a study population (of adolescents using hormonal contraception) in which the majority of participants were LNG-IUS users.

Discussion

In this small study, we compared the weight gain with DMPA versus LNG-IUS among post-partum/parous adolescents over 12 months of follow-up. We freely admit that due to the small sample size and the high dropout rate we cannot make definitive conclusions. In this study with limitations we found no statistically significant difference in weight gain between LNG-IUS users and DMPA users at 3, 6 and 12 months of follow-up. However these results need to be verified with a larger sample size and more highly powered study.

Our unadjusted data concerning early weight gain as a predictor of later weight gain among users of hormonal contraception is very consistent with the existing literature [2,3]. We found that weight gain at 3 and 6 months were both predictive of weight gain at 12 months, with weight gain at 6 months more predictive. What separates this study from these prior studies is that our study population consisted entirely of post-partum/parous adolescents and the majority of adolescents with weight data at 12 months were actually LNG-IUS users. This, we believe, is a novel finding that needs to be replicated.

Limitations

Limitations of our study included a small sample size as well as loss to follow up. We originally started with 29 adolescents in the DMPA group and 37 in the LNG-IUS user group. By 12 months of follow-up we were only able to find weight data on 27 out of the 66 women who initially consented to participate and this could have biased our results. Another limitation was that our study was limited to a single institution and so our results may not be generalizable to adolescents from other regions.

Conclusion

In conclusion, in this very small study with notable limitations among postpartum/parous adolescents we did not find a statistically significant difference in weight gain between users of the LNG-IUS and DMPA users at 3, 6 and 12 months of follow up. In addition, we found that the positive relationship between early weight gain and later weight gain, previously described among adolescent DMPA users, appears to also hold when the study population contains a significant proportion of post-partum adolescent LNG-IUS users. Further studies, using larger sample sizes, are needed to validate these findings.

References

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