acta medica

INVITED REVIEW

Rational use of glucocorticoids during pregnancy in patients with systemic vasculitis

Nilüfer Alpay Kanıtez[1]

[1] Division of Rheumatology, Department of Internal Medicine, School of Medicine, Koç University, İstanbul, Türkiye.

Corresponding Author: Nilüfer Alpay Kanıtez ▪ Email: nilalpay@gmail.com
This manuscript was peer-reviewed by Dr. Gözde Yardımcı

ABSTRACT

Glucocorticoids (GC) are important in fetoplacental development and GC production increases in pregnant women.GCs can be used for various reasons during pregnancy, but there are some things to keep in mind.In patients with systemic vasculitis, GC exposure may be associated with complications such as low birth weight and preterm birth. When planning pregnancy in patients with systemic vasculitis, the aim should be to control disease activity with the lowest possible dose of GC. Pregnant women who are required to use GC should also be monitored more closely for gestational diabetes and hypertension.

Keywords: glucocorticoids, pregnancy, systemic vasculitis.

Physiology related to pregnancy and glucocorticoids

Immune adaptation mechanisms are needed for a healthy pregnancy. Glucocorticoids (GC) play an important role in normal fetoplacental growth, and GC production increases in pregnant women [1]. GC production progresses in balance with the increase in progesterone, reducing the risk of fetomaternal complications (Figure 1). On the other hand, GC is used in the prevention or treatment of some fetomaternal complications that develop for various reasons [2]. Indications for pregnancy-related GC treatment are shown in Figure 2. The main determinant of which GC will be used in treatment is the GC dose to which the fetus will be exposed. Placental passage rates according to GC types are shown in Table 1 [3].

Pregnancy in systemic vasculitis

In systemic vasculitis, the process should be considered for three different periods listed below in the evaluation of pregnancy.

i. Family planning

ii. Pregnancy course

iii. Postpartum period

First of all, pregnancy should be considered from the first visit in a systemic vasculitis patient of childbearing age, and information should be provided about the timing of conception and contraceptive methods. The expectation of a negative effect on the course of the disease in a planned pregnancy is quite low. However, even in

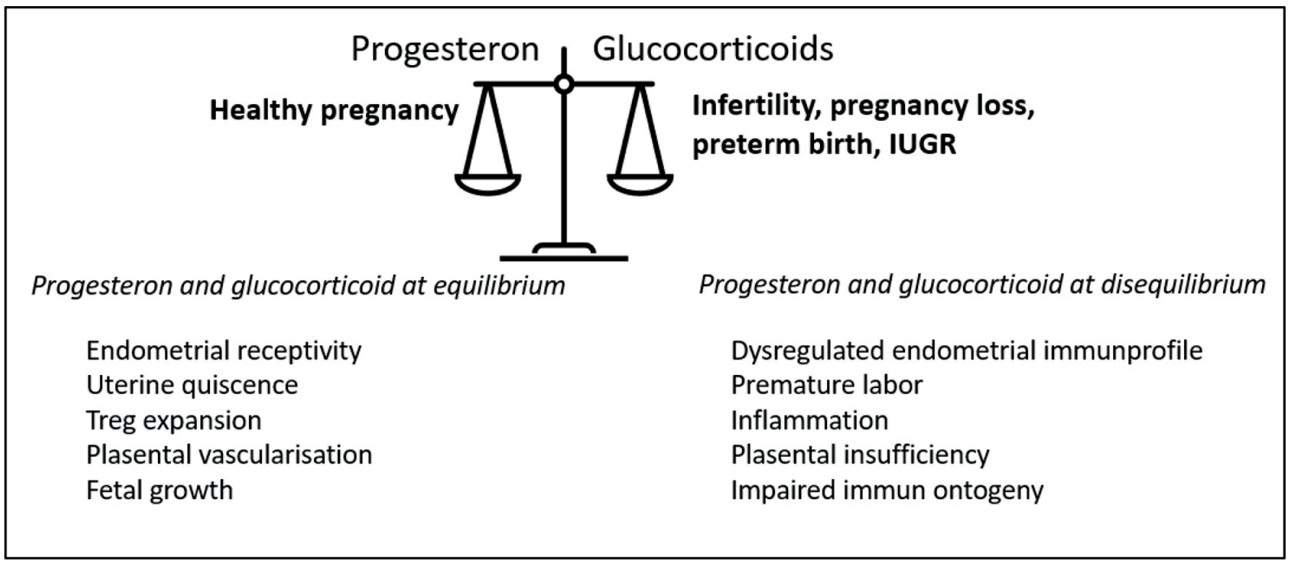

Figure 1. The importance of equilibrium between glucocorticoids and progesterone in pregnancy.

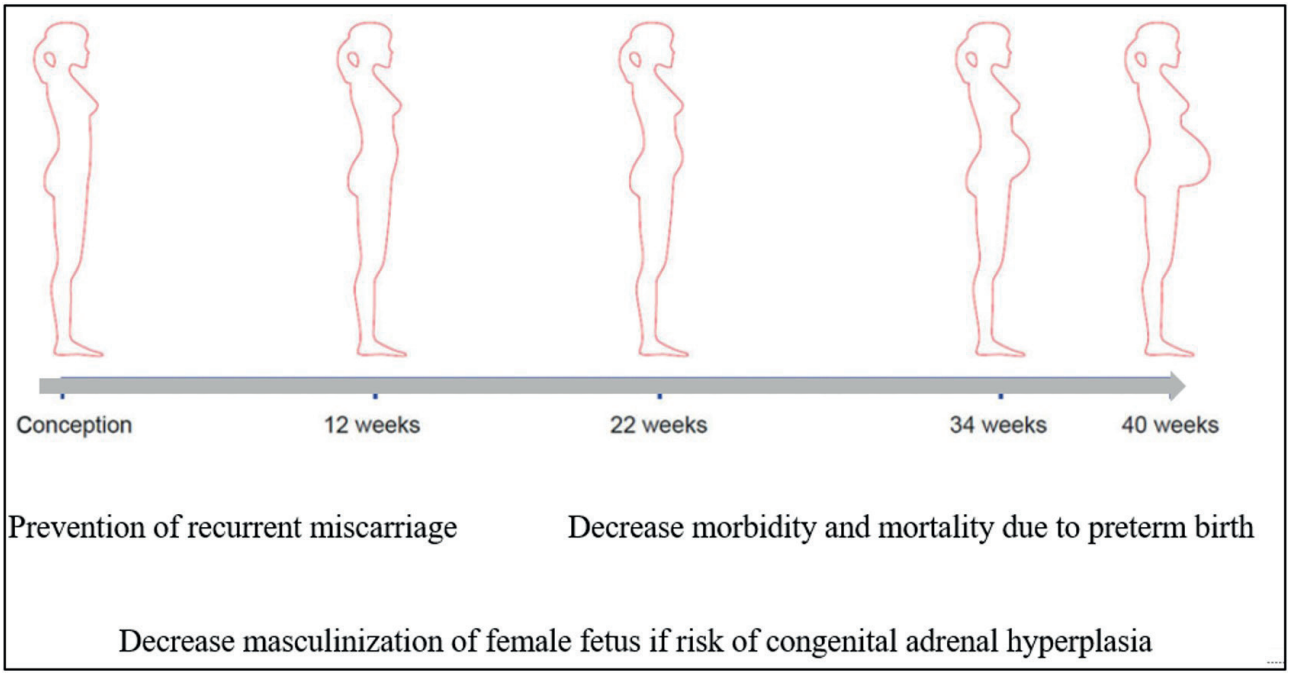

Figure 2. Indications for glucocorticoid treatments according to pregnancy time.

Table 1. Placental passage rates of glucocorticoids

Hydrocortisone	15 %
Prednisolone	10 %
Methylprednisolone	45 %
Betamethasone	30 %
Dexamethasone	65%

planned pregnancies, the risk of some fetomaternal complications, including abortion, preeclampsia, premature birth, intrauterine growth retardation and postpartum thrombosis, is still increased [4]. It is known that factors such as disease flare, uncontrolled hypertension and renal artery involvement increase the risk of fetomaternal complications [5].

The assessment of disease flare becomes more complicated in pregnancy. Clinical findings of tachycardia, tachypnea, murmur, arthralgia and morning stiffness and laboratory findings of acute phase elevation and moderate proteinuria are the most important confounders in the determination of disease activity due to the physiological changes of pregnancy. Acute phase indicators may increase significantly, especially in the last trimester [6].

Adverse effects of glucocorticoid drugs in pregnancy

It is thought that there is a relationship between GC exposure and low birth weight and preterm birth in patients with systemic vasculitis, as in patients with rheumatoid arthritis and systemic lupus erythematosus, due to maternal effects [7]. Although there are conflicting results regarding preeclampsia, GC use probably increases the risk of preeclampsia. The risk of cleft palate/lip is probably increased in children of pregnant women exposed to GC, especially in the first trimester. There is also an increase in the risk of gestational diabetes. GC side effect risks are related to dose and duration.

In a case-specific setting, ensuring disease control with low-dose GC can protect against additional immunosuppressive load. For example, it has been reported that disease control can be achieved with only low-dose GC throughout pregnancy in patients with Takayasu arteritis [8]. When general population data are examined, longer hospitalisation in neonatal intensive care unit, increased risk of hypoglycemia, reduced head diameter, and neuropsychological developmental problems have been reported more frequently in children of pregnant women exposed to GC before the 34th week [9].

In conclusion, when planning pregnancy, it is advisable to aim for controlling systemic vasculitis disease activity with the lowest effective dose of GC. The risk of fetomaternal complications may increase in pregnant women using GC, depending on the dose and duration. These pregnancies should be monitored more closely for gestational diabetes and hypertension. More clinical studies are needed on topics such as the effects of GC use on the newborn in patients with systemic vasculitis, the effects of high-dose GC on the fetomaternal and neonatal outcomes, the effect of continuing low-dose GC on pregnancy loss, the effect of antenatal GC use on preterm birth, and the comparison of low-dose GC with immunosuppressive treatments in disease control.

Author contribution

Study conception and design: NAK; draft manuscript preparation: NAK. All authors reviewed the results and approved the final version of the manuscript.

Funding

The authors declare that the study received no funding.

Conflict of interest

The authors declare that there is no conflict of interest.

REFERENCES

[1] Solano ME, Arck PC. Steroids, Pregnancy and Fetal Development. Front Immunol 2020;10:3017. https://doi.org/10.3389/fimmu.2019.03017

[2] Kemp MW, Newnham JP, Challis JG, Jobe AH, Stock SJ. The clinical use of corticosteroids in pregnancy. Hum Reprod Update 2016;22(2):240-59. https://doi.org/10.1093/humupd/dmv047

[3] Chi CC, Wang SH, Wojnarowska F, Kirtschig G, Davies E, Bennett C. Safety of topical corticosteroids in pregnancy. Cochrane Database SystRev 2015;(10):CD007346. https://doi.org/10.1002/14651858.CD007346.pub3

[4] Ross C, D'Souza R, Pagnoux C. Pregnancy Outcomes in Systemic Vasculitides. Curr Rheumatol Rep 2020;22(10):63. https://doi.org/10.1007/s11926-020-00940-5

[5] Gönenli MG, Kaymaz Tahra S, Kara M, et al. Pregnancy in Takayasu's arteritis has a high risk of hypertension-related fetomaternal complications: A retrospective study of a Turkish cohort. Int J Rheum Dis 2022;25(2):140-6. https://doi.org/10.1111/1756-185X.14247

[6] Wirestam L, Pihl S, Saleh M, Wetterö J, Sjöwall C. Plasma C-Reactive Protein and Pentraxin-3 Reference Intervals During Normal Pregnancy. Front Immunol 2021;12:722118. https://doi.org/10.3389/fimmu.2021.722118

[7] Bandoli G, Palmsten K, Forbess Smith CJ, Chambers CD. A Review of Systemic Corticosteroid Use in Pregnancy and the Risk of Select Pregnancy and Birth Outcomes. Rheum Dis Clin North Am 2017;43(3):489-502. https://doi.org/10.1016/j.rdc.2017.04.013

[8] Alpay-Kanitez N, Omma A, Erer B, et al. Favourable pregnancy outcome in Takayasu arteritis: A single-centre experience. Clin Exp Rheumatol 2015;33(2Suppl89):S-7-10.

[9] Ninan K, Gojic A, Wang Y, et al. The proportions of term or late preterm births after exposure to early antenatal corticosteroids, and outcomes: Systematic review and meta-analysis of 1.6 million infants. BMJ 2023;382:e076035. https://doi.org/10.1136/bmj-2023-076035