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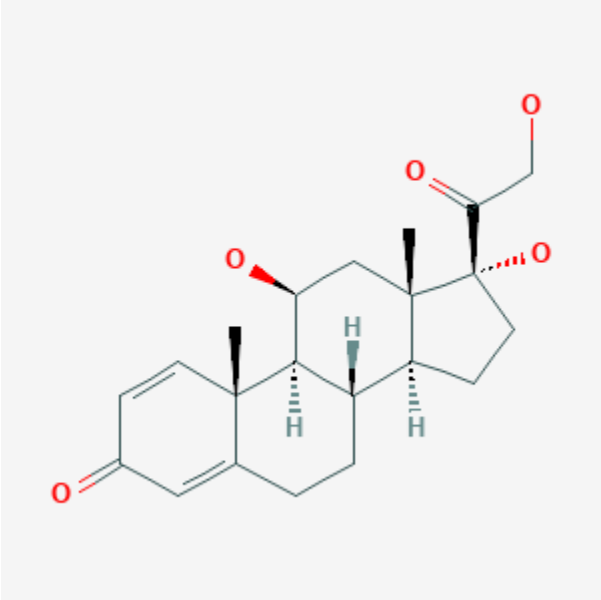
Prednisolone

Revised: October 31, 2018.

CASRN: 50-24-8



Drug Levels and Effects

Summary of Use during Lactation

Amounts of prednisolone in breastmilk are very low. No adverse effect have been reported in breastfed infants with maternal use of any corticosteroid during breastfeeding. With high maternal doses, avoiding breastfeeding for 4 hours after a dose should markedly decrease the dose received by the infant. However, this maneuver is not necessary with short-term use. High doses might occasionally cause temporary loss of milk supply.

Because absorption from the eye is limited, ophthalmic prednisolone would not be expected to cause any adverse effects in breastfed infants. To substantially diminish the amount of drug that reaches the breastmilk after using eye drops, place pressure over the tear duct by the corner of the eye for 1 minute or more, then remove the excess solution with an absorbent tissue.

Drug Levels

Maternal Levels. Seven women were given 5 mg of radiolabeled prednisolone orally. A total of 0.14% of the total radioactivity was recovered from breastmilk over the next 48 to 61 hours.[1]

After oral prednisolone, levels of 23 to 40 mcg/L occurred with doses of 10-20 mg in 3 women, while peak levels of 106 and 137 mcg/L occurred after doses of 30 and 45 mg, respectively and a peak prednisolone level of 317 mcg/L occurred after a dose of 80 mg. The ratio of the peak milk to peak plasma prednisolone levels were about 0.1 with doses of 20 mg or less while it was 0.2 with doses of 30 mg or more. The ratios of the areas under the curve reached 0.2 only with an 80 mg dose. The higher ratios with higher doses is thought to be due to saturation of serum protein binding sites. Peak milk prednisolone levels occur about 1 hour after an oral dose of prednisolone and dropped with a half-life similar to the serum half-life. The authors estimated that a breastfed infant would receive less than 0.1% of the mothers total dosage of prednisolone; however, using the higher accepted milk intake value (150 mL/kg daily), this value would be less than 0.015% of the mother's dose.[2]

Three women were given 50 mg of prednisolone sodium phosphate intravenously. Thirty minutes after injection, milk prednisolone concentrations varied from about 200 to 400 mcg/L and dropped with a half-life slightly faster than the 2.5 hour half-life in serum. The authors estimated that a nursing infant would receive an average 0.074% of the total dose administered to the mother.[3]

Two women taking oral prednisone provided milk by complete breast emptying using a breast pump every 2 to 3 hours over one dosage interval. One subject was taking a dose of 2 mg every 12 hours and the other was taking 15 mg every 24 hours. The respective infant weight-adjusted dosages were 0.58% and 0.35% of the maternal dose for prednisone and 0.18% and 0.09% for prednisolone. Drug concentrations in milk were undetectable (<4 mcg/L) after 12 hours for prednisone and 6 hours for prednisolone.[4]

Infant Levels. Relevant published information was not found as of the revision date.

Effects in Breastfed Infants

None reported with prednisolone or any other corticosteroid. In a prospective follow-up study, 6 nursing mothers reported taking prednisone (dosage unspecified) with no adverse infant effects.[5] There are several reports of mothers breastfeeding during long-term use of corticosteroids with no adverse infant effects: prednisone 10 mg daily (2 infants)[6][7] and prednisolone 5 to 7.5 mg daily (14 infants).[8]

A woman who was nursing (extent not stated) her newborn infant was treated for pemphigus with oral prednisolone 25 mg daily, with the dosage increased over 2 weeks to 60 mg daily. She was also taking cetirizine 10 mg daily and topical betamethasone 0.1% twice daily to the lesions. Because of a poor response, the betamethasone was changed to clobetasol propionate ointment 0.05%. She continued breastfeeding throughout treatment and her infant was developing normally at 8 weeks of age and beyond.[9]

A woman with pemphigoid gestationis was treated with prednisolone in a dosage tapering from 0.7 mg/kg daily to 1 mg daily during breastfeeding. She also received courses of intravenous immune globulin 2 grams/kg over 3 days at 4, 9 and 13 weeks postpartum. She breastfed her infant (extent not stated) for 3 months with no problems noted.[10]

Two mothers with systemic lupus erythematosus were reported who took prednisolone 30 or 40 mg daily during pregnancy and lactation as well as tacrolimus 3 mg daily. Three years after birth, both children were healthy. The durations of lactation were not stated.[11]

Effects on Lactation and Breastmilk

Published information on the effects of prednisolone on serum prolactin or on lactation in nursing mothers was not found as of the revision date. However, medium to large doses of depot corticosteroids injected into joints have been reported to cause temporary reduction of lactation.[12][13][14]

A study of 46 women who delivered an infant before 34 weeks of gestation found that a course of another corticosteroid (betamethasone, 2 intramuscular injections of 11.4 mg of betamethasone 24 hours apart) given between 3 and 9 days before delivery resulted in delayed lactogenesis II and lower average milk volumes during the 10 days after delivery. Milk volume was not affected if the infant was delivered less than 3 days or more than 10 days after the mother received the corticosteroid.[15] An equivalent dosage regimen of prednisolone might have the same effect.

A study of 87 pregnant women found that betamethasone given as above during pregnancy caused a premature stimulation of lactose secretion during pregnancy. Although the increase was statistically significant, the clinical importance appears to be minimal.[16] An equivalent dosage regimen of prednisolone might have the same effect.

Alternate Drugs to Consider

Methylprednisolone, Prednisone

References

1. McKenzie SA, Selley JA, Agnew JE. Secretion of prednisolone into breast milk. Arch Dis Child. 1975;50:894-6. PubMed PMID: 1211963.
2. Ost L, Wettrell G, Bjorkhem I, Rane A. Prednisolone excretion in human milk. J Pediatr. 1985;106:1008-11. PubMed PMID: 3998938.
3. Greenberger PA, Odeh YK, Frederiksen MC et al. Pharmacokinetics of prednisolone transfer to breast milk. Clin Pharmacol Ther. 1993;53:324-8. PubMed PMID: 8453851.
4. Ryu RJ, Easterling TR, Caritis SN et al. Prednisone pharmacokinetics during pregnancy and lactation. J Clin Pharmacol. 2018;58:1223-32. PubMed PMID: 29733485.
5. Ito S, Blajchman A, Stephenson M et al. Prospective follow-up of adverse reactions in breast-fed infants exposed to maternal medication. Am J Obstet Gynecol. 1993;168:1393-9. PubMed PMID: 8498418.
6. Moretti ME, Sgro M Johnson DW et al. Cyclosporine excretion into breast milk. Transplantation. 2003;75:2144-6. PubMed PMID: 12829927.
7. Munoz-Flores-Thiagarajan KD, Easterling T, Davis C et al. Breast-feeding by a cyclosporine-treated mother. Obstet Gynecol. 2001;97(5 pt 2):816-8. PubMed PMID: 11336764.
8. Nyberg G, Haljamae U, Frisenette-Fich C et al. Breast-feeding during treatment with cyclosporine. Transplantation. 1998;65:253-5. PubMed PMID: 9458024.
9. Westermann L, Hugel R, Meier M et al. Glucocorticosteroid-resistant pemphigoid gestationis: successful treatment with adjuvant immunoadsorption. J Dermatol. 2012;39:168-71. PubMed PMID: 22379622.
10. Gan DC, Welsh B, Webster M. Successful treatment of a severe persistent case of pemphigoid gestationis with antepartum and postpartum intravenous immunoglobulin followed by azathioprine. Australas J Dermatol. 2012;53:66-9. PubMed PMID: 22309336.
11. Izumi Y, Miyashita T, Migita K. Safety of tacrolimus treatment during pregnancy and lactation in systemic lupus erythematosus: A report of two patients. Tohoku J Exp Med. 2014;234:51-6. PubMed PMID: 25175032.
12. McGuire E. Sudden loss of milk supply following high-dose triamcinolone (Kenacort) injection. Breastfeed Rev. 2012;20:32-4. PubMed PMID: 22724311.

13. Babwah TJ, Nunes P, Maharaj RG. An unexpected temporary suppression of lactation after a local corticosteroid injection for tenosynovitis. Eur J Gen Pract. 2013;19:248-50. PubMed PMID: 24261425.
14. Smuin DM, Seidenberg PH, Sirlin EA et al. Rare adverse events associated with corticosteroid injections: A case series and literature review. Curr Sports Med Rep. 2016;15:171-6. PubMed PMID: 27172081.
15. Henderson JJ, Hartmann PE, Newnham JP, Simmer K. Effect of preterm birth and antenatal corticosteroid treatment on lactogenesis ii in women. Pediatrics. 2008;121:e92-100. PubMed PMID: 18166549.
16. Henderson JJ, Newnham JP, Simmer K, Hartmann PE. Effects of antenatal corticosteroids on urinary markers of the initiation of lactation in pregnant women. Breastfeed Med. 2009;4:201-6. PubMed PMID: 19772378.

Substance Identification

Substance Name

Prednisolone

CAS Registry Number

50-24-8

Drug Class

Breast Feeding

Lactation

Corticosteroids, Systemic

Corticosteroids, Ophthalmic

Glucocorticoids

Anti-Inflammatory Agents