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Ranibizumab

Revised: February 17, 2020.

CASRN: 347396-82-1

Drug Levels and Effects

Summary of Use during Lactation

Ranibizumab inhibits vascular endothelial growth factor (VEGF). Ranibizumab is a is a large protein molecule with a molecular weight of 48,000, absorption is unlikely because it is probably destroyed in the infant's gastrointestinal tract, so systemic effects in infants are not expected. Since VGEF is present in human milk and is thought to help in maturation of the infant's gastrointestinal tract, concern has been raised about the maternal use of VGEF inhibitors during breastfeeding. One infant was breastfed, apparently without noticeable harm, following maternal intravitreal ranibizumab injections. VGEF levels in breastmilk were not changed following the injection. In another woman who did not breastfeed had decreasing VGEF levels in milk over a 28-day period. The role that breastfeeding has in maintaining VGEF levels in not clear. Note that the typical alternative to breastmilk is infant formula, which contains no VGEF.

Ranibizumab is a human immunoglobulin G1 (IgG1) kappa antibody. Holder pasteurization (62.5 degrees C for 30 minutes) decreases the concentration of endogenous immunoglobulin G by up to 79%.[1-3] A study of 67 colostrum samples that underwent Holder pasteurization found that IgG amounts decreased by 34 to 40%. Specific IgG subclasses decreased by different amounts, with IgG1 activity decreasing by about 37%.[4] None of the studies measured IgG activity.

Drug Levels

Maternal Levels. One mother who was nursing a 16-month-old infant received an unspecified dose of ranibizumab intraocular injection for myopic choroidal neovascularization. After her first dose, breastfeeding was stopped and milk samples were obtained 1 hour before the injection and on days 1 through 7, 14, 21, and 28 after injection. Ranibizumab was undetectable (<1.6 mcg/L) for the first 2 days after injection and then was 34.7 mcg/L on day 3. On day 6, the concentration was about 55 mcg/L, then it drifted slowly up to a concentration of about 30 mcg/L on day 28 after the injection. Another mother studied at the same center was given ranibizumab 0.5 mg intravitreal injections for myopic choroidal neovascularization and continued to breastfeed her 1 month-old infant. Milk samples were taken 4 weeks after a dose and on days 1 through 7, 14, 21, and 28 after injection. All milk samples had ranibizumab concentrations below the lower limit of quantification of 1.6 mcg/L. The investigators hypothesized that continuous nursing resulted in the lower levels of ranibizumab in milk.[5]

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

Effects in Breastfed Infants

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

Effects on Lactation and Breastmilk

A woman was given 3 intravitreal injections of bevacizumab for scar-associated choroidal neovascularization in her left eye. Vascular endothelial growth factor (VEGF) was measured in serum and breastmilk. After the intravitreal injection of bevacizumab, the VEGF level in breastmilk decreased from 13.3 to 8.6 mcg/L over a 2-week period. After changing therapy to ranibizumab therapy, no decrement in breastmilk VEGF was seen during the 42 days following injection.[6] It is not clear from the article if the mother continued breastfeeding after the injection.

Two women received ranibizumab intraocular injections for myopic choroidal neovascularization. In one who did not breastfeed, VGEF decreased from 22.8 mcg/L at baseline to 12.3 mcg/L on day 1 and to 4.9 mcg/L on day 28 after her dose. The second woman who did breastfeed her infant, had VGEF levels that were largely unchanged, varying between about 8 and 12 mcg/L over the 28-day follow up. The investigators hypothesized that continuous nursing resulted in the lower levels in the relative lack of VGEF reduction in milk.[5]

Alternate Drugs to Consider

(Intravitreal) Bevacizumab

References

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Substance Identification

Substance Name

Ranibizumab

CAS Registry Number

347396-82-1

Drug Class

Breast Feeding

Lactation

Antibodies, Monoclonal

Angiogenesis Inhibitors