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Warfarin Overdose in a Breast-feeding Woman

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We describe a case of a breastfeeding woman with an accidental warfarin overdose resulting in a markedly elevated prothrombin time. The breast-fed infant was evaluated and tested for ill effects. We discuss the use of warfarin while breast-feeding. [West J Emerg Med. 2011;12(2):216-217.]

We report a case of an accidental warfarin overdose in a breastfeeding 40-year-old woman. The patient had been prescribed warfarin at a dose of five milligrams per day to treat a pulmonary embolus that was diagnosed shortly after she underwent a caesarian section delivery. At the time of presentation, the patient had been taking warfarin for nearly two months. She had originally been given one-milligram tablets and instructed to take five tablets daily. However, one week prior to presentation, her refill prescription was dispensed as five-milligram tablets. Unaware of the change, the patient continued taking five tablets per day, for a total dose of 25 milligrams daily for seven days. The error was realized when she returned to the pharmacy requesting a refill after only one week, having completely run out of the medication.

Upon presentation, the patient was asymptomatic. Laboratory coagulation profile studies were markedly abnormal, with an international normalized ratio (INR) of greater than 10.0 (reference range 2.0-3.0 for standard anticoagulation, 2.5-3.5 for mechanical valve anticoagulation), a prothrombin time (PT) of greater than 100.0 seconds (normal range 9.3-11.2), and an activated partial thromboplastin time (aPTT) of 65.2 seconds (normal range 25.0-32.7). The previous INR, checked two weeks prior, was 2.3. Her complete blood count showed no anemia; in fact, the hematocrit was slightly higher than the last measured value two months prior. The patient was treated with a single five-milligram dose of oral vitamin K. Her warfarin was withheld for two days, after which the INR had decreased to 1.5 (subtherapeutic range).

Warfarin in therapeutic doses is generally considered safe in breastfeeding. Little information has been published on warfarin overdose during breastfeeding, whether in an acute setting (a single ingestion), or a prolonged exposure such as this one. We were concerned about the potential effects of the

overdose on the patient's breast-fed infant. The patient had been breastfeeding during the week of warfarin overdose, up until a few hours before presentation. Since birth, the baby had been fed almost solely breast milk.

The patient's eight-week-old infant was brought in to the emergency department for evaluation and coagulation studies. History and examination revealed a healthy-appearing infant, with no signs or symptoms of bleeding. Coagulation studies revealed an INR of 1.0, PT of 10.3 seconds, and aPTT of 33.8 seconds. The aPTT was slightly high compared to the laboratory upper limit of 32.4 seconds. However, coagulation studies performed on the infant three weeks prior to the overdose revealed that the aPTT was 38.9 seconds, also slightly elevated above the laboratory reference range (PT and INR were within normal limits at that time). One week before the infant's first aPTT, the mother's INR was 3.3, and five days later it was 2.3. Given that warfarin is considered very safe at standard doses during breast-feeding,[1] it is unlikely that the infant's previously elevated aPTT was related to the mother's warfarin use.

Warfarin is known to pass the placental barrier during pregnancy and to cause birth defects as well as fetal and maternal coagulopathy. Fetal warfarin syndrome is characterized by skeletal abnormalities, including stippling of bones, nasal hypoplasia, and other abnormalities. However, warfarin is considered safe in lactation as it does not pass into breast milk to any measurable degree.[2,3] This is due to several of its molecular properties: warfarin is ionic, making it a polar molecule and thus nonlipophilic.[4] Less lipophilic compounds are unlikely to be excreted in breast milk. Additionally, warfarin is 99% bound to serum proteins, also associated with minimal transfer to breast milk.[5]

While few human studies exist, the results of a 1977 case series indicated that warfarin was not detectable in breast milk

in 13 lactating women. [6] The second part of the study evaluated seven breastfeeding infants whose mothers were taking therapeutic levels of warfarin. None of the seven infants had any change in plasma PT.

A MEDLINE search did not identify any case reports of a breastfeeding mother with a critically supratherapeutic INR. The pharmacokinetics of warfarin and prior case series indicate that warfarin is clinically undetectable in breast milk when the mother is taking standard doses. This case further suggests that warfarin, even in high doses resulting in a critically elevated maternal INR, does not cause a significant effect on the coagulation cascade or clinical bleeding in the breastfeeding infant.

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REFERENCES

1. Berglund F, Flodh H, Lundborg P, et al. Drug use during pregnancy and breast-feeding. A classification system for drug information. *Acta Obstet Gynecol Scand Suppl.* 1984; 126:1-55.

2. Olthof E, de Vries TW. [Breast feeding and oral anticoagulants]. *Afd. Kindergeneeskunde, Academisch Ziekenhuis Groningen.* 1993; 61:175-7.

3. McKenna, Rajalaxmi, Cole ER, et al. Is warfarin sodium contraindicated in the lactating mother? *Journal of Pediatrics.* 1983; 103(2): 325-27.

4. O'Reilly RA. Studies on the coumarin anticoagulant drugs: Interaction of human plasma albumin and warfarin sodium. *Journal of Clinical Investigation.* 1967; 46:829-37.

5. Clark SL, Porter TF, West FG. Coumarin derivatives and breast-feeding. *Obstetrics and Gynecology.* 2000; 95(1): 938-40.

6. Orme ML, Lewis PJ, de Swiet M, et al. May mothers given warfarin breast-feed their infants? *Br Med J.* 1977; 1:1564-65.