Infant feeding and HIV transmission

Summary of Published paper

The observation that mother-to-child transmission by HIV-1 infected women can occur through breastfeeding has resulted in policies that recommend avoidance of breastfeeding by HIV-1 infected women in the developed world and under specific circumstances in developing countries. Studies have been able to show that infants uninfected at 3-6 months of age are still at risk of becoming infected through breastfeeding. Previous studies from Durban, South Africa have shown that the highest overall rate of vertical transmission was in exclusively breastfed children (39%) and the lowest in never-breastfed infants (24%) with no evidence of a duration effect in the exclusively breastfed group. However a recent Lancet article asserts that analyses of HIV-1 transmission via breastmilk are flawed because they have failed to account for the effects of different types of breastfeeding practices. The article is based on a study which prospectively examined infant feeding practices of 549 HIV-1 infected women who were part of a vitamin A intervention trial in Durban, South Africa. The proportion of HIV-1 infected infants at one day, one month and at 3 months were compared in three different feeding groups, exclusively breastfed, mixed fed and formula fed. HIV-1 infection was defined by a positive RNAPCR test.

Results of the study

*The risks of HIV-1 transmission associated with nonexclusive breastfeeding seem to be substantial, exclusive breastfeeding does not seem to convey any excess risk of HIV-1 transmission over formula feeding.*

Exclusively breastfed infants were less likely to be infected at three months than were those receiving mixed feeding or those never breastfed. Similar percentages of exposed infants in the three feeding groups had evidence of infection at birth - about 6% - but differences in vertical transmission had emerged by one month and had become larger by the time the babies were 3 months old. At 3 months, 18.8% of 156 never breastfed children were estimated to be HIV-1 infected compared with 21.3% of 393 breastfed children, however this result was not statistically significant. The estimated proportion of infants HIV-1 infected by 3 months was significantly lower for those exclusively breastfed to 3 months than for those who received mixed feeding before 3 months (14.6%
versus 24.1%). The authors of the study suggest the following:

1. that the virus acquired during delivery could have been neutralised by immune factors present in breastmilk but not in formula feeds. Breastmilk contains non-specific immune factors that have antiviral and anti-HIV-1 effects in vitro, and that,
2. the fact that mixed feeding carries the highest risk is not surprising because the beneficial immune factors of breastmilk are probably counterbalanced by damage to the infant's gut by contaminants or allergens in mixed feeds.

The authors conclude that a possible recommendation is for exclusive breastfeeding with early weaning and that there is an urgent need to supplement existing inadequate data on HIV-1 transmission through breastfeeding.

An editorial in the same edition of the Lancet makes the following points about this research study.

Mozambique

If the increase in the percentage infected reflects becoming infected around the time of delivery the trend in the never breastfed group (6.4% at birth to 14.8% at one month to 18.8% at three months) like the increasing trend in the mixed feeders group is surprisingly protracted. Furthermore why was there only a small increase in the proportion infected in the breastfeeding group at 1 month (from 6.8% at birth to 8.7%) but a much steeper increase at 3 months (to 14.6%). The absolute increases in percentage infected were similar for the three groups between 1 month and 3 months and the real difference seems to have occurred in the first month of life. In the editorial it is questioned whether this finding suggests a protective early effect of exclusive breastfeeding?

If HIV-1 infected women choose to breastfeed perhaps they should refrain from giving any other foods, at least for the first 3 months. In view of the risk of late postnatal transmission through breastmilk after 3-6 months, and because introduction of other foods becomes more frequent as the infant gets older, women could then be advised to consider early and abrupt weaning. But it is premature to base public health guidelines on the basis of the results of this one study, and further research is urgently required to confirm and elucidate the findings.
