Verstraeten, Thomas

From: Verstraeten, Thomas
Sent: Friday, July 14, 2000 10:42 AM
To: 'Philippe Grandjean'; Verstraeten, Thomas
Cc: Chen, Robert (Bob) (NIP); Destefano, Frank; Pless, Robert; Bernier, Roger; Tom Clarkson; Pal Weihe
Subject: RE: Thimerosal and neurologic outcomes

Dear Dr. Grandjean,
Thank you for a very rapid response!
I apologize for dragging you into this nitty gritty discussion, which in Flemish we would call "muggeziften" . I know much of this is very hypothetical and personally I would rather not drag the Faroe and Seychelles studies in this entire thimerosal debate, as I think they are as comparable to our issue as apples and pears at the best.
Unfortunately I have witnessed how many experts,looking at this thimerosal issue, do not seem bothered to compare apples to pears and insist that if nothing is happening in these studies then nothing should be feared of thimerosal. I do not wish to be the advocate of the anti-vaccine lobby and sound like being convinced that thimerosal is or was harmful, but at least I feel we should use sound scientific argumentation and not let our standards be dictated by our desire to disprove an unpleasant theory.
Sincerely,
Tom Verstraeten.

-----Original Message-----
From: Philippe Grandjean [mailto:pgrand@health.sdu.dk]
Sent: Friday, July 14, 2000 6:45 AM
To: Verstraeten, Thomas
Cc: Chen, Robert (Bob) (NIP); Destefano, Frank; Pless, Robert; Bernier, Roger; Tom Clarkson; Pal Weihe
Subject: Re: Thimerosal and neurologic outcomes

Dear Dr. Verstraeten - I have given your message priority and will respond below to the
questions raised in your message. I shall look in detail at the documents you attached, but
that will not be until next week when I'm back in Boston. Best regards -
Philippe Grandjean

> 1. Dr. Clarkson stated that neither of the Faroe or Seychelles studies found
> any adverse effects linked to post-natal exposure. Two remarks :
>
> * The Faroe study did found a negative statistically significant
> association between two test results (finger tapping and reaction time) and
> post-natal exposure (measured by child hair mercury at year). Adjusting for
> breastfeeding did not only not resolve these, but added a third association
> (visuospatial memory).
>
> (ref. Grandjean et al, Methylmercury Exposure Biomarkers as Indicators of
> Neurotoxicity in Children Aged 7 Years, AJE, 1999).

That's correct. At least when assessed by the Bender Visual Motor Gestalt Test, visuospatial
performance is more closely associated with postnatal exposure than with

prenatal.

> * The post-natal exposure in the Seychelles study was measured by hair
> mercury at 66 months. This is a very late marker, probably not comparable to
> exposure as assessed in the VSD study. In the Faroe study hair mercury level
> at 66 months measure was found to have a correlation to hair mercury at 1
> year of only 0.25 .

The Faroes hair was collected at 12 months of age and 7 years.

> 2. I was equally surprised that nor Dr. Koller, co-author of the excellent
> mercury-profile produced by ATSDR, nor any of the other toxicologists
> present commented on the enormous differences in exposure levels between the
> Faroe and Seychelles populations and the US. The hair mercury concentrations
> in both sites (4.27 : g/g in Faroe, 6.8 : g/g in Seychelles) were about 10
> times higher then the mean in some US populations, (0.47-0.78 : g/g). The
> mean cord blood mercury concentration in the Faroe study was 20.4 : g/li,
> with a range of 1.9 - 102. In the Mercer study, the base line concentration
> among term children was .04 : g/li. This suggests an average base-line level
> that is at least 500 times higher in the study sites. The lowest level in
> the Faroe study was still 50 times higher than the Mercer mean. This brings
> into question:

The average Faroese hair-mercury levels at 12 months of age were about 1/4 of the maternal hair levels at parturition, so there is a postnatal decrease that should be figured in.

> * the comparability of the study populations and the US population

I'm not sure what this means.

> * the possibility that both study populations are so far above a
> maximal threshold that no effects are to be expected (comparing high to very
> high may not be the same as comparing very low to low, assuming the dose
> response to have a minimal and maximal threshold level for observing
> effects, or a S shaped dose-response curve).

Like lead, mercury could have a 'flat' dose-effect curve at low doses.

> 3. It was further suggested that for any biological plausibility to exist, a
> concentration at least as high as the blood concentrations found in the
> Faroe population should be attained. The authors of the Seychelles study
> indeed mention that the mean of some of their neurobehavioral tests were
> comparable to US norms. Comparability of tests in such different
> socio-economic and cultural settings, however, seems at least

questionable.
> Neither of the studies (Faroe or Seychelles) intended to compare results of
> neurobehavioral testing to other non-exposed populations and to do so would
> depend on questionable assumptions of comparability.

The studies in the Faroes and the Seychelles assessed continuous outcome variables, and the
populations may be too small to assess realibly the dichotomous clinical outcomes. I agree
that comparison with norms from other cultures should not be done.

> 4. Also, it is unfortunate that no mention was made of the finding in the
> Seychelles study that increased mercury exposure was related to decreased
> activity levels in males at 29 months. In view of our ADD findings, this may
> not be unimportant. (ref. Davidson et al. Longitudinal Neurodevelopmental
> Study of Seychellois Children Following In Utero Exposure to methylmercury
> from maternal Fish Ingestion : Outcomes at 19 and 29 Months,
> Neurotoxicology, 95).
>
> 5. Finally, no mention was made of the protective effect of Selenium and the
> confounding by the omega-3 fatty acids in fish that may further complicate
> comparing exposure from fish to exposure from vaccines.

I am not sure if selenium offers any protection. It occurs in a 10-fold molar excess above
mercury in cord blood in the Faroes, and the mercury/selenium ratio is not better risk
indicator than the mercury concentration as such. The essential fatty acids have mainly been
linked to visual function development.

One final comment. In the Faroes, only the pertussis vacc contained mercury in 1986-1987.
Vaccination is the responsibility of the district physicians and coverage is virtually
complete. Cohort 2 born in 1994 was not exposed to any mercury from vaccines.