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Poster Session V
Immunology, vaccination and host defences

Q-FEVER SKIN TEST: MORE THAN A DIAGNOSTIC TEST

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Objectives: Q-fever skin testing is used to measure cell-mediated immunity to the intracellular bacterium *Coxiella burnetii*. Its use is limited to pre-vaccination screening, to exclude individuals with pre-existing immunity who are at increased risk for hypersensitivity reactions to the whole-cell vaccine administered subcutaneously. We investigated whether this *in-vivo* test influences subsequent measurements of immune response.

Methods: We assessed the humoral and cellular immune responses before, 6 and 12 months after skin testing in 63 individuals who were not vaccinated because of either a positive skin test or positive serology in screening. IgG anti-*C. burnetii* antibodies were measured using immune-fluorescence assay. A positive serology was defined as anti-phase I or II *C. burnetii* IgM/IgG titre >=1:32. The cellular immune response was assessed by measuring in-vitro C. burnetii-specific interferon(IFN)-gamma production in blood. The assay was considered positive when net IFN-gamma production was >=32 pg/mL as previously described.

Results: Of the 35 individuals not vaccinated because of a positive skin test but negative serology, 15/35 (43%) showed seroconversion after 6 months, and 7/32 (22%) were seropositive after 12 months. The proportions with positive results in the IFN-gamma assay were 19/35 (54%) at baseline, 26/35 (74%) after 6 months and 22/32 (69%) after 12 months. The mean±SE specific IFN-gamma production increased from 185±88 pg/mL (at baseline) to 422±141 pg/mL at 6 months (*P*=0.009) and 223±91 pg/mL at 12 months (*P*=0.17) after skin testing.

In the 28 individuals, unvaccinated because of positive serology in screening, an increase of IgG anti-phase I and II antibody titre was observed after the skin test: at 6 months, 21/28 (75%) had an increase in phase I IgG titre, 14/28 (50%) in phase II IgG titre; at 12 months, 11/25 (44%) in phase I IgG and 4/25 (16%) phase II IgG titre. The increase of median titre was 2-fold after 6 months (median phase I IgG from 1:64 to 1:128, *P*=0.0001; phase II IgG from 1:128 to 1:256, *P*=0.001) and this significant increase disappeared after 12 months. The proportions with positive results in the IFN-gamma assay were 22/28 (79%) at baseline, 23/28 (82%) after 6 months and 22/25 (88%) after 12 months. The IFN-gamma production in this group increased from 301±100 pg/mL (at baseline) to 918±296 pg/mL at 6 months (*P*=0.039) and 500±271 pg/mL 12 months (*P*=0.598) after skin testing.

Conclusion: Q-fever skin testing, performed as a diagnostic tool to detect previous contact with *C. burnetii*, influences the Q-fever serostatus and the specific *C. burnetii* induced IFN-gamma production in a positive way. This can be seen as a boosting effect of the intracutaneously administered low dosis of *C. burnetii* antigens. The phenomenon should be taken into consideration in the follow-up of individuals with positive Q-fever serology or IFN-gamma production.