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Abstract (poster session)

Interaction of Treponema pallidum with microglial cells

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Objectives: Treponema pallidum, the agent of syphilis, exerts tropism for the central nervous system, in the course of natural infection. In the present study we investigated T. pallidum susceptibility to phagocytosis by primary microglia rabbit cells in opsonic and non-opsonic conditions. Methods: Bacterial strains and culture conditions. T. pallidum, Nichols strain, was maintained by testicular passage in adult male New Zealand white rabbits. To be used as a working stock of antigen, treponemes were resuspended in PBS supplemented with 2% (v/v) heat inactivated non-infected rabbit serum to 5×108 organisms/ml. As control, Leptospira interrogans serovar icterohaemorragiae was used at the same concentration. BV-2 cells. The cell line was maintained in vitro in RPMI 1640 medium supplemented with 10% heat-inactivated FBS, gentamycin (50 µl/ml) and L-glutamine (2 mM). Cells were detached by vigorous shaking and fresh cultures were started at a cell concentration of 5×104/ml. Measurement of phagocytosis. Phagocytosis was evaluated on adherent BV/2 cells by immunofluorescent assay. Opsonisation of treponemes. When indicated, treponemes were incubated for 30 min with normal or immune human serum at a concentration of 10%. Results: The phagocytosis of viable T. pallidum by BV/2 cells, studied by immunofluorescence staining of cells-associated bacteria, showed that ingestion of live, unopsonized treponemes was slow. Microglial cells started to be positive 30 min. after infection, when only 3% of the cells presented small round fluorescent inclusion-like bodies. Thereafter, the number of positive cells progressively increased with time: 10% and 21% of BV/2 cells were positive, respectively, 1 and 2 h after infection. Opsonisation of T. pallidum with human immune serum did not substantially modify the percentage (5%) of microglial cells ingesting T. pallidum 30 min. after infection, whereas opsonisation increased phagocytosis after 1 and 2 h of incubation, when 15% and 48% cells were positive, respectively. When L. interrogans was used, numbers of positive cells at 30 minute, 1 hour and 2 hour post infection were 68,7%, 76,3% and 88,1%, respectively. Conclusions: Microglial cells were much more effective in binding and ingesting unopsonized leptospires than treponemes. Opsonization of treponemes did not affect ingestion at 30 min and 1 h of incubation, whereas it significantly ($P<0.01$) increased phagocytosis at 2 h post-infection.