MAIT Cells are Highly Enriched in Bronchoalveolar Lavage Fluid of Patients with TB

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METHODS

MAIT Cells are Highly Enriched in Bronchoalveolar Lavage Fluid of Patients with TB history of M.tb origin. Class I Related Protein 1) which presents vitamin B metabolites of microbial pathogens. They are restricted by the evolutionarily conserved MR-1 (MHC TRAV1-2). MAIT cells respond to a range of bacterial, mycobacterial and fungal CD8+ lymphocytes that have a semi-invariant Mucosal Associated Invariant T (MAIT) cells are non-conventional innate-like lymphocytes.

BACKGROUND

- BAL cells (and matched PBMC when available) were:
- cohort of patients undergoing clinical bronchoscopy in Durban, South Africa.
- Thus we hypothesized that in pulmonary TB, MAIT cells would be enriched in the periphery demonstrating significant MAIT cell compartmentalization (p=0.0016, Figures 2 and 3). In one example of pulmonary TB, TRAV1-2+ cells comprised a significantly higher percentage of lung-resident CD8+ T cells (median 22.9%, IQR 16.4-33.9%) than in controls (median 5.0%, IQR 4.3-5.8%, p=0.0005). In contrast, during pulmonary TB, TRAV1-2+ CD8+ T-cells were not enriched in the periphery demonstrating significant MAIT cell compartmentalization (p=0.0016, Figures 2 and 3).

RESULTS

In pulmonary TB cases, TRAV1-2+ cells comprised a significantly higher percentage of lung-resident CD8+ T cells (median 22.9%, IQR 16.4-33.9%) than in controls (median 5.0%, IQR 4.3-5.8%, p=0.0005). In contrast, during pulmonary TB, TRAV1-2+ CD8+ T-cells were not enriched in the periphery demonstrating significant MAIT cell compartmentalization (p=0.0016, Figures 2 and 3).

CONCLUSIONS

MAIT cells, an emerging class of innate lymphocytes, are highly enriched in the lungs during pulmonary TB. Pulmonary TRAV1-2+CD8+ cells produce TNFα but not IL-17.

Interestingly, though we and others have shown that HIV severely depletes MAITs in the peripheral blood, here we find MAITs to be enriched in the lungs of both HIV-positive and HIV-negative patients during active pulmonary tuberculosis. This suggests that MAITs may be redirected to mucosal surfaces rather than destroyed by HIV. Additional research into the phenotype, function and compartmental distribution of MAITs in HIV infection is needed.

Further research on the role of MAIT cells in protective immunity against TB is urgently needed; given their restriction by the monomorphic MR-1, their potential in novel TB vaccine strategies should be explored.

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REFERENCES

For references, please see the original manuscript.