DENDRITIC CELLS

Case of mistaken identity

Distinguishing dendritic cells (DCs) from macrophages has long been problematic, owing to overlapping features and functions between the various subsets. Now, Lambrecht, Guillas and colleagues identify a new DC subset that arises in inflammatory conditions that assumes the characteristics of DCs, monocytes and macrophages and may explain why antigen-presenting functions have been wrongly attributed to monocyte-derived cells (MCs).

Conventional DCs are classified into phenotypically and functionally distinct subsets: type 1 cells (cDC1s) depend on the transcription factor interferon regulatory factor 8 (IRF8) for their capacity to present and cross-present antigen to CD8+ T cells, and type 2 cells (cDC2s) are driven by IRF4 to promote CD4+ T cell responses. But inflammation muddies the water. MCs are recruited to inflamed tissues and can be easily confused with cDC2s.

To explore the cDC dichotomy in inflammatory settings, the authors studied the lungs of mice infected with pneumonia virus of mice (PVM), cDCs were separated from MCs by surface staining for CD26 and CD64, respectively, and XCR1 and CD172a were used to distinguish cDC1s from cDC2s, respectively. On infection, the proportion of MCs in the lungs increased, while cDC1s and cDC2s decreased. However, another DC population appeared in infected lungs that was positive for CD26, CD172a, CD64 and MAR-1; they named these cells inflammatory cDCs (inf-cDC2s).

Unlike MCs, inf-cDC2s accumulated in lung-draining lymph nodes in infected mice, thus demonstrating DC-like migratory capacity.

In vitro assays of DC function showed that inf-cDC2s were better than cDC2s at inducing CD4+ T cell proliferation. Although not as efficiently as cDC1s, inf-cDC2s could also induce CD8+ T cell proliferation and

ALLERGY

Does IgE sialylation hold the key to allergy?

Allergic reactions are induced when IgE, bound to mast cells and basophils via the high affinity receptor FcεRI, is crosslinked by an otherwise innocuous antigen, inducing the release of allergic mediators. However, many people have allergen-specific IgE yet do not experience allergic symptoms, and it is unclear why IgE induces allergy in some circumstances but not in others. Reporting in Nature, Shade et al. now demonstrate that sialylation of IgE is a key determinant of allergic pathogenicity.

The authors compared IgE from sera of individuals with peanut allergy with IgE from non-atopic individuals. When incubated with human mast cells and crosslinked with anti-IgE, they found that ‘allergic IgE’ induced significantly stronger degranulation than ‘non-atopic IgE’, despite comparable binding of IgE to the mast cells. Mass spectrometry revealed that IgE from the different cohorts differed with regard to post-translational modifications: allergic IgE had significantly increased terminal sialylation of specific glycan residues whereas non-atopic IgE was enriched in complex glycans terminating in galactose. Indeed,