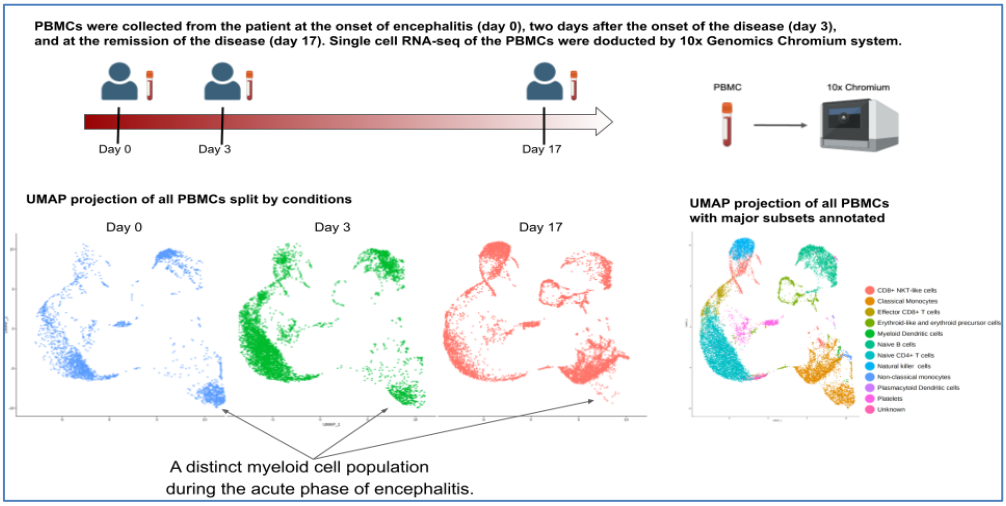
Single-cell RNA-seq analysis identifies distinct myeloid cells in a case with 1 encephalitis temporally associated with COVID-19 vaccination

Keywords: COVID-19, mRNA vaccines, encephalitis, single-cell RNA sequencing, classical monocyte

- The authors chronologically analyzed peripheral blood mononuclear cells (PBMCs) from a patient who developed encephalitis associated with COVID-19 vaccination.
- Single-cell RNA sequencing (scRNA-seq). of the PBMCs identified a distinct myeloid cell population in PBMCs during the acute phase of encephalitis.
- This specific myeloid population was detected neither in the remission phase of the disease nor in the healthy cohort.

Recently accumulating evidence has highlighted the rare occurrence of COVID-19 vaccination-induced inflammation in the central nervous system. However, the precise information on immune dysregulation related to the COVID-19 vaccination-associated autoimmunity remains elusive. Here we report a case of encephalitis temporally associated with COVID-19 vaccination, where single-cell RNA sequencing (scRNA-seq) analysis was applied to elucidate the distinct immune signature in the peripheral immune system. Peripheral blood mononuclear cells (PBMCs) were analyzed using scRNA-seq to clarify the cellular components of the patients in the acute and remission phases of the disease. The data obtained were compared to those acquired from a healthy cohort. The scRNA-seq analysis identified a distinct myeloid cell population in PBMCs during the acute phase of encephalitis. This specific myeloid population was detected neither in the remission phase of the disease nor in the healthy cohort. Our findings illustrate induction of a unique myeloid subset in encephalitis temporally associated with COVID-19 vaccination. Further research into the dysregulated immune signature of COVID-19 vaccination-associated autoimmunity including the cerebrospinal fluid (CSF) cells of central nervous system (CNS) is warranted to clarify the pathogenic role of the myeloid subset observed in our study.



Article
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