Data Article

Haematological and immunological data of Chinese children infected with coronavirus disease 2019

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**ABSTRACT**

Haematological and immunological data of children with COVID-19 infection is lacking. Between 21st January and 20th March 2020, 244 children who were confirmed to have COVID-19 infection and admitted to the Wuhan Children’s Hospital, China were retrospectively reviewed. 193 children were considered as symptomatic, which was defined as having either the presence of clinical symptoms or the presence of CT thorax abnormalities. Their haematological and immunological profiles, including complete blood counts, lymphocyte subsets (T, B and NK cell counts), immunoglobulin (Ig) profiles (IgG, IgA and IgM) and cytokine profiles were analysed and compared between the symptomatic and asymptomatic groups. The median values and the interquartile ranges were calculated. Comparison was made using the Mann–Whitney U test. Children with symptomatic COVID-19 infection had significantly lower haemoglobin levels, but higher absolute lymphocyte and monocyte counts, IgG and IgA levels, as well as interleukin 6 (IL-6), IL-10, tumour necrosis factor alpha and interferon gamma levels. The obtained data will be utilized for further studies in comparing children and adults with COVID-19 infections in other parts of the world and with different severity.

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**Specifications table**

- **Subject**: Infectious disease
- **Specific subject area**: Immunological profiles of children with COVID-19 infection
- **Type of data**: Table
- **How data were acquired**: Children in Wuhan, China who were tested positive for SARS-CoV-2 by nasopharyngeal aspirate (NPA) reverse-transcriptase polymerase chain reactions (RT-PCR) were admitted to the Wuhan Children’s Hospital between 21st January and 20th March 2020. Their hospital records and laboratory results were retrieved and analysed.
- **Data format**: Raw
- **Parameters for data collection**: Age, gender, complete blood counts, lymphocyte subset profiles, immunoglobulin profiles and cytokine profiles
- **Description of data collection**: Laboratory data were retrospectively retrieved from the patients’ hospital record.
- **Data source location**: Institution: Wuhan Children’s Hospital
- City/Town/Region: Wuhan
- Country: China
- **Data accessibility**: With the article
- **Related research article**: Xiong X, Chua GT, Chi S, et al. A Comparison Between Chinese Children Infected with COVID-19 and with SARS. J Pediatr 2020 doi: https://doi.org/10.1016/j.jpeds.2020.06.041 [1]

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Value of the data

- The COVID-19 pandemic has caused more than 5 million people being infected and 350,000 people died [2]. Although the majority of paediatric cases have been reported to have mild symptoms, their haematological and immunological profiles has not been well described.
- Understanding the differences in the haematological and immunological profiles between children with symptomatic and asymptomatic COVID-19 infections may help the utilization of targeted therapies in treatment COVID-19 infections, especially for severe cases.
- These data will also allow scientists and researchers to compare the immunological profiles of children with COVID-19 infection between different countries, especially with recent reports from Europe on the occurrence of Kawasaki-like syndrome, which was not observed in our Chinese cohort [3].

1. Data description

Children with COVID-19 infection confirmed by nasopharyngeal aspirate (NPA) SARS-CoV-2 reverse-transcriptase polymerase chain reaction (RT-PCR) were admitted to the Wuhan Children's Hospital between 21st January and 20th March 2020. Laboratory data were retrospectively retrieved from the patients' hospital record. The age and gender, as well as their haematological and immunological profiles were recorded (supplementary file), including their complete blood counts (total white cell count, haemoglobin concentration, platelet counts, absolute neutrophil, lymphocyte and monocyte counts), lymphocyte subset profiles (total CD3 T cell count, CD3CD4 helper T cell count, CD3CD8 cytotoxic T cell count, CD19 B cell count and CD16CD56 natural killer cell count), immunoglobulin profiles (IgG, IgA and IgM) and cytokine profiles (interleukin 2 (IL-2), IL-4. IL-6, IL-10, tumour necrosis factor alpha and interferon gamma levels).

Table 1 compared the haematological and immunological profiles between children with symptomatic and asymptomatic COVID-19 infection. Children with symptomatic COVID-19 infection had significantly lower haemoglobin levels, but higher absolute lymphocyte counts, IgG and IgA levels, as well as interleukin 6 (IL-6), IL-10, tumour necrosis factor alpha and interferon gamma levels.

2. Experimental design, materials and methods

Data were analysed using Microsoft Excel® (Redmond, Washington, USA) and GraphPad® Prism 8 (San Diego, California, USA). The median values and interquartile ranges were calculated. For comparison of data between the symptomatic and asymptomatic groups, the Mann–Whitney U test was used for continuous variables. A p-value of <0.05 is considered as statistically significant.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships which have, or could be perceived to have, influenced the work reported in this article.

Ethics statement

This study is approved by the Research Ethics Board of the Wuhan Children’s Hospital (Reference number: WHCH 2020022).
Table 1
Immunological profiles of children with symptomatic and asymptomatic COVID-19 infection.

|                       | Symptomatic (n = 193) | Asymptomatic (n = 51) | p-value |
|-----------------------|-----------------------|-----------------------|---------|
|                       | Median                | Interquarile Range    | Missing data | Median                | Interquarile Range    | Missing data |         |
| Total white cell count (× 10^9/L) | 6.76                  | 5.37 - 8.27           | 10        | 6.41                  | 5.36 - 7.16           | 4           | 0.15    |
| Haemoglobin (g/L)     | 125                   | 115 - 133             | 10        | 132                   | 125 - 138             | 4           | 0.0003  |
| Platelets (× 10^9/L)  | 287                   | 239 - 368             | 10        | 286                   | 247 - 336             | 4           | 0.56    |
| Absolute Neutrophil Count (× 10^9/L) | 2.36                  | 1.72 - 3.49           | 10        | 3.12                  | 2.26 - 3.69           | 4           | 0.05    |
| Absolute Lymphocyte Count (× 10^9/L) | 2.97                  | 1.97 - 4.56           | 9         | 2.67                  | 1.86 - 3.08           | 4           | 0.04    |
| Absolute Monocyte Count (× 10^9/L) | 0.43                  | 0.35 - 0.59           | 10        | 0.39                  | 0.32 - 0.48           | 4           | 0.02    |
| Total T Cells (CD3) (cells/μL) | 2246                  | 1639 - 3197           | 38        | 1970                  | 1677 - 2464           | 6           | 0.08    |
| Helper T Cells (CD3CD4) (cells/μL) | 1172                  | 806 - 1820            | 76        | 1122                  | 848 - 1395            | 23          | 0.4     |
| Cytotoxic T Cells (CD3CD8) (cells/μL) | 1006                  | 680 - 1281            | 78        | 991                   | 768 - 1183            | 23          | 0.87    |
| B Cells (CD19) (cells/μL) | 618                   | 381 - 900             | 39        | 539                   | 432 - 644             | 6           | 0.18    |
| NK Cells (CD16/56) (cells/μL) | 342                   | 199 - 507             | 39        | 257                   | 156 - 474             | 6           | 0.11    |
| IgG (g/L)             | 9.19                  | 6.14 - 11.2           | 14        | 10.05                 | 8.75 - 11.65          | 3           | 0.004   |
| IgA (g/L)             | 1.01                  | 0.33 - 1.69           | 14        | 1.34                  | 1.13 - 1.74           | 3           | 0.005   |
| IgM (g/L)             | 0.9                   | 0.6 - 1.18            | 14        | 0.89                  | 0.69 - 1.33           | 3           | 0.39    |
| IL2 (pg/ml)           | 1.43                  | 1.23 - 1.71           | 36        | 1.33                  | 1.15 - 1.56           | 4           | 0.1     |
| IL4 (pg/ml)           | 2.66                  | 2.12 - 3.25           | 36        | 2.46                  | 1.95 - 3.24           | 4           | 0.19    |
| IL6 (pg/ml)           | 3.98                  | 2.95 - 7.25           | 36        | 3.53                  | 2.59 - 4.36           | 4           | 0.01    |
| IL10 (pg/ml)          | 3.85                  | 3.23 - 5.16           | 36        | 3.08                  | 2.70 - 3.45           | 4           | <0.0001 |
| Tumour necrosis factor-alpha (pg/ml) | 1.7                   | 1.24 - 2.20           | 36        | 1.41                  | 1.15 - 1.89           | 4           | 0.04    |
| Interferon-gamma (pg/ml) | 3.01                  | 2.39 - 4.25           | 36        | 2.46                  | 1.85 - 3.38           | 4           | 0.004   |

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi: 10.1016/j.dib.2020.105953.

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