**SUPPLEMENTAL DATA**

**Table S1: Patient demographics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Healthy controls** | **Leukemia** | **Lymphoma** | **Multiple myeloma** | **All patients** |
| **Total Individuals** |  | 69 | 157 | 173 | 221 | 551 |
| **Gender** | **Male** | 15 (21.7%) | 95 | 101 | 114 | 310 (56.3%) |
|  | **Female** | 54 (78.3%) | 62 | 72 | 107 | 241 (43.7%) |
| **Age: median (range)** |  | 31 (22 – 67) | 66 (25 – 92) | 65 (22 – 97) | 65 (34 – 85) | 65 (22 – 97) |
| **On treatment** | **No** |  | 61 | 62 | 12 | 135 (24.5%) |
|  | **Yes** |  | 96 | 111 | 209 | 416 (75.5%) |
| **Leukemia subtype** | **ALL** |  | 9 |  |  |  |
|  | **AML** |  | 10 |  |  |  |
|  | **CLL/SLL** |  | 120 |  |  |  |
|  | **CML** |  | 3 |  |  |  |
|  | **CMML** |  | 3 |  |  |  |
|  | **HCL** |  | 4 |  |  |  |
|  | **MDS** |  | 3 |  |  |  |
|  | **MPN** |  | 3 |  |  |  |
|  | **NK cell** |  | 1 |  |  |  |
|  | **Other** |  | 1 |  |  |  |
| **Lymphoma subtype** | **AITL** |  |  | 4 |  |  |
|  | **DLBCL** |  |  | 55 |  |  |
|  | **FL** |  |  | 42 |  |  |
|  | **HL** |  |  | 14 |  |  |
|  | **MCL** |  |  | 13 |  |  |
|  | **MZL** |  |  | 24 |  |  |
|  | **PTCL** |  |  | 10 |  |  |
|  | **WM** |  |  | 10 |  |  |
|  | **Other** |  |  | 1 |  |  |
| **Multiple myeloma subtype** | **Smoldering** |  |  | 10 |  |
| **Active** |  |  |  | 211 |  |

**Abbreviations:** ALL, acute lymphoblastic leukemia; AML, acute myeloid leukemia; CLL/SLL, chronic lymphocytic leukemia/small lymphocytic lymphoma; CML, chronic myelogenous leukemia; CMML, chronic myelomonocytic leukemia; HCL, hairy cell leukemia; MDS, myelodysplastic syndrome; MPN, myeloproliferative neoplasm; NK cell, natural killer cell; AITL, angioimmunoblastic T-cell lymphoma; DLBCL, diffuse large B cell lymphoma; FL, follicular lymphoma; HL, Hodgkin lymphoma; MCL, mantle cell lymphoma; MZL, marginal zone lymphoma; PTCL, peripheral T-cell lymphoma; WM, Waldenstrom macroglobulinemia.

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**Figure S1. Study schema.** Patients with hematologic malignancies (leukemia, lymphoma, and multiple myeloma) who received the mRNA-based vaccines, BNT162b2 and mRNA-1273, had humoral responses measured at 1 (pre-dose 2) and 3 months from initial vaccination. Note: “1 month” timepoint = 3 weeks from first BNT162b2 vaccine and 4 weeks from first mRNA-1273 vaccine. Parallel assessments from a healthy volunteer cohort provided controls.

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**Figure S2. Serial humoral responses to COVID-19 vaccines.** Anti-SARS-CoV-2 spike IgG antibody titers were measured at 1 and 3 months after initial COVID-19 vaccination and summarized using before-after scatter plots, comparing hematologic malignancy patients with healthy controls. Note: “1 month” timepoint = 3 weeks from first BNT162b2 vaccine and 4 weeks from first mRNA-1273 vaccine. Green dashed line denotes the threshold for a positive result (50.0 AU/ml).

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**Figure S3. Lymphoid and myeloid leukemia humoral responses to COVID-19 vaccines.** Anti-SARS-CoV-2 spike IgG antibody titers were measured at 3 months after initial COVID-19 vaccination for patients with lymphoid and myeloid leukemias and summarized using scatter plots with median and interquartile range. Green dashed line denotes the threshold for a positive result (50.0 AU/ml). Orange dashed line denotes the median value at 1 month for healthy controls (886 AU/ml). Red dashed line denotes the median value at 3 months for healthy controls (7720 AU/ml). \*\*\**P* < .001.

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**Figure S4. Neutralizing antibody levels after COVID-19 vaccines by hematologic malignancy subtype.** Circulating neutralizing antibodies against SARS-CoV-2 were assessed at 1 and 3 months after initial COVID-19 vaccination. Note: “1 month” timepoint = 3 weeks from first BNT162b2 vaccine and 4 weeks from first mRNA-1273 vaccine. Violin plots comparing leukemia (Leuk; pink fill), lymphoma (Lymph; green fill), and multiple myeloma (MM; blue fill) patients with healthy controls (HC; gray fill). Green dashed line denotes the threshold for a positive result (30% inhibition). n= number of individuals per category.