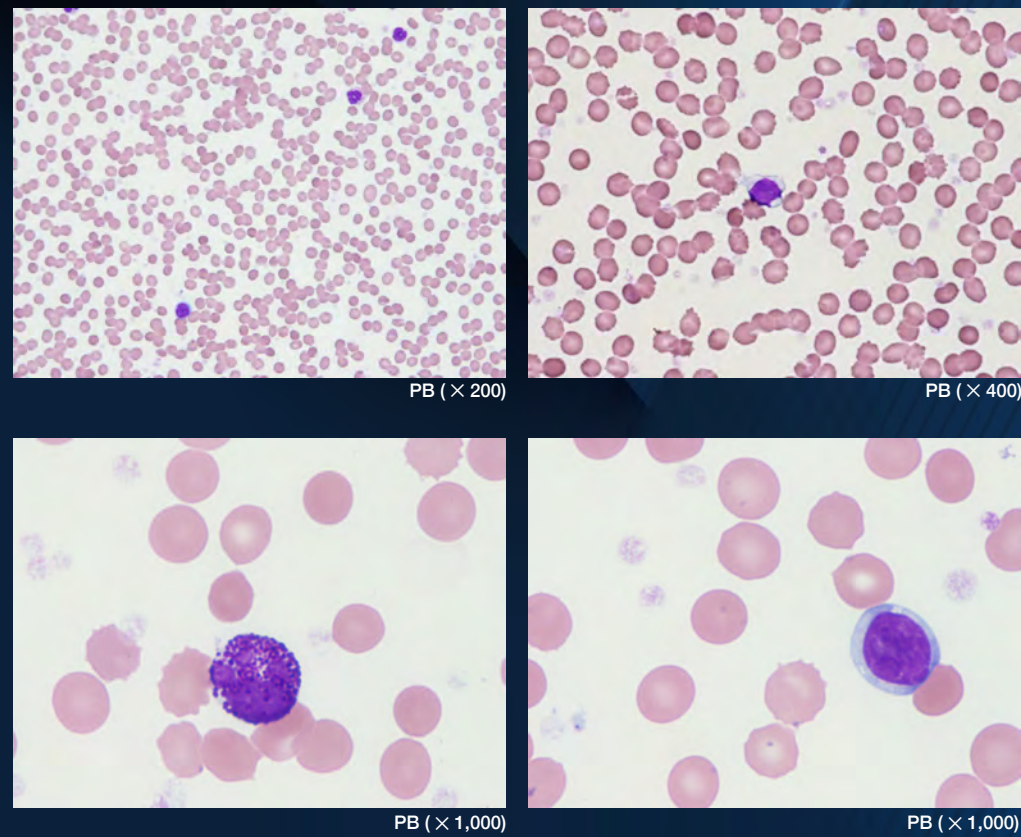


Case 5-2

# Cold Agglutinin Disease (sample after warming to 37°C)

The patient developed hemolytic anemia in 20XX and was diagnosed with cold agglutinin disease after a detailed examination revealed a cold agglutinin titer of 1:256. The patient received monthly red blood cell transfusions for treatment. As countermeasure to the measurement results affected by the red blood cell agglutination, shown in Case 5-1, the cells were warmed at 37°C for 15 minutes and then the sample was quickly measured.

### Blood smear (May-Giemsa staining)



### Explanation of case

In this clinical case, a cold agglutinin titer was measured because hemolytic anemia was observed and peripheral blood smear showed erythrocyte agglutination, and the result was 1:256. The patient was diagnosed with cold agglutinin disease due to it. Cold agglutinin disease is often associated with lymphoplasmacytic lymphoma, but no lymphoma cells were observed in this case. Peripheral blood smear prepared immediately after warming at 37°C for 15 minutes showed some red blood cell agglutination, but they were mostly separated.

## Celltac Data

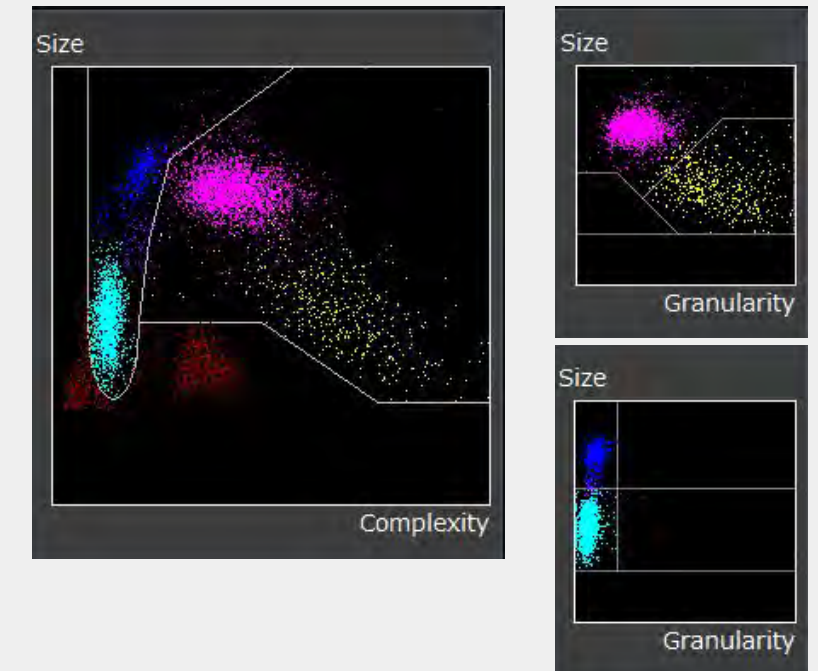
### Numerical results

WBC	7.51		10 <sup>3</sup> /μL
RBC	2.23	L	10 <sup>6</sup> /μL
HGB	7.54	L	g/dL
HCT	22.2	L	%
MCV	99.6		fL
MCH	33.8		pg
MCHC	34.0		g/dL
RDW-CV	12.5		%
RDW-SD	49.8		fL
PLT	539.3	H	10 <sup>3</sup> /μL
PCT	0.42	H	%
MPV	7.8		fL
PDW	17.1		%
P-LCR	32.9		%
P-LCC	177.4	H	10 <sup>3</sup> /μL
NE	3.97		10 <sup>3</sup> /μL
LY	2.36		10 <sup>3</sup> /μL
MO	0.45		10 <sup>3</sup> /μL
EO	0.65	H	10 <sup>3</sup> /μL
BA	0.08		10 <sup>3</sup> /μL
NE%	52.73		%
LY%	31.49		%
MO%	6.05		%
EO%	8.72		%
BA%	1.01		%
RET	0.1017		10 <sup>6</sup> /μL
RET%	4.56	H	%
IRF	6.9		%
LFR	93.1		%
MFR	5.9		%
HFR	1.0		%

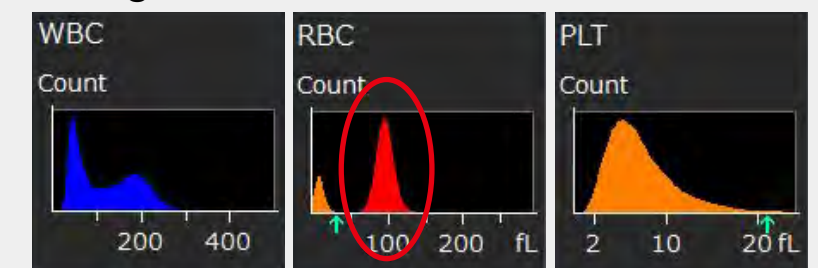
### Flags

Morphological Flags	Numerical Flags
	Anemia

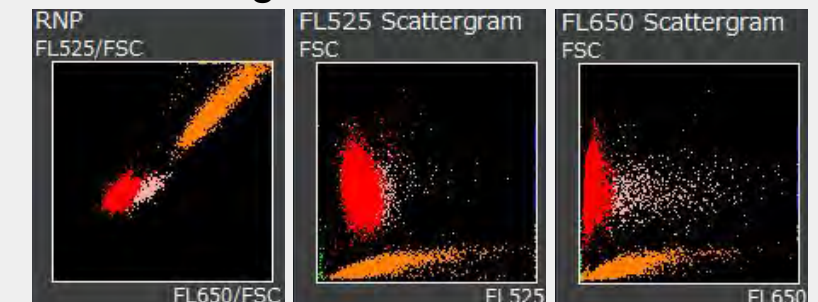
### Scattergrams



### Histograms



### RET Scattergrams



### Explanation of scattergram/histogram

Case 5-1: Results of measuring samples at room temperature for cold agglutinin disease showed false lows on both RBC and HCT and high MCHC at 44.6 g/dL. When the sample was warmed to 37°C, MCHC was 34.0 g/dL and the "Abnormal MCHC" flag disappeared. Both RDW-CV and RDW-SD were within the reference range. It is considered that the warming of the specimens improved the values of the erythrocyte-related parameters. In addition, the peak in the large area on the right side of the RBC histogram (○) disappeared. It is considered that warming the sample decreased the activity of cold agglutinin and eliminated the agglutination of RBCs, resulting in correct results. No significant differences in leukocyte differentiations and reticulocyte counts were observed before or after warming. This suggested that there was no effect of erythrocyte agglutination on those items.