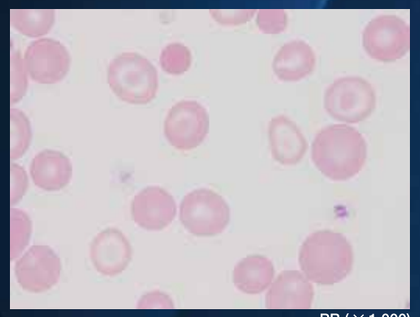
Case 10

Iron Deficiency Anemia (IDA)

The patient visited a local clinic because of shortness of breath and was referred to the hospital after receiving a diagnosis of anemia.

Blood smear (May-Giemsa staining)

PB (×400)



PB (×1,000)

Visual differential counts

	(%)
Blast	0.0
Promyelo	0.0
Myelo	0.0
Meta	0.0
Band	0.0
Seg	70.0
Eosino	2.0
Baso	2.0
Mono	5.0
Lympho	21.0
Reactive-Ly	0.0
Other	0.0
NRBC	0.0
Megakaryo	1/100WBC

Explanation of case

The complete blood count revealed an HGB level of 5.35 g/dL and an MCV of 50.4 fL, indicating microcytic anemia. Biochemical tests revealed the following findings: Fe, 15 µg/dL; unsaturated iron binding capacity (UIBC), 613 µg/dL; and ferritin, 13 ng/mL. These findings suggest iron deficiency anemia due to reduced Fe and ferritin levels and elevated UIBC.

Peripheral blood smear showed target cell and Hypochromic cell, consistent with iron deficiency anemia.

Celltac Data

Numerical results

WBC	4.33		$10^3/\mu L$
RBC	3.35	*	$10^6/\mu L$
HGB	5.35	L	g/dL
HCT	16.9	L	%
MCV	50.4	L	fL
MCH	16.0	L	pg
MCHC	31.7	L	g/dL
RDW-CV	26.5	H	%
RDW-SD	53.4	H	fL
PLT	359.5	*	$10^3/\mu L$
PCT	0.31		%
MPV	8.5		fL
PDW	15.7	L	%
P-LCR	45.3		%
P-LCC	162.9		$10^3/\mu L$
NE	2.87		$10^3/\mu L$
LY	1.05		$10^3/\mu L$
MO	0.18	L	$10^3/\mu L$
EO	0.09		$10^3/\mu L$
BA	0.14	H	$10^3/\mu L$
NE%	66.17		%
LY%	24.26		%
MO%	4.27		%
EO%	2.15		%
BA%	3.15	H	%

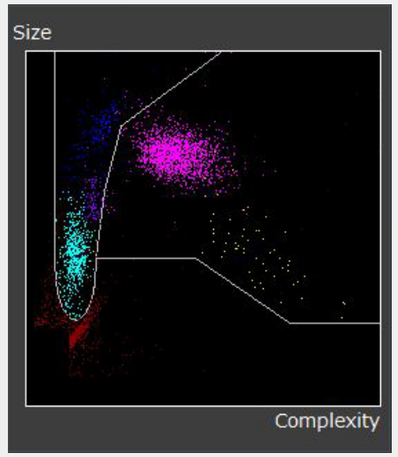
Flags

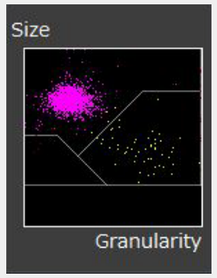
Morphological Flags	Numerical Flags
	Anemia
	Anisocytosis
	Microcytosis
	PLT-RBC Interference

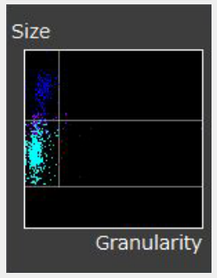
@Research use only

@Mentzer Index	15
@RDWI	398

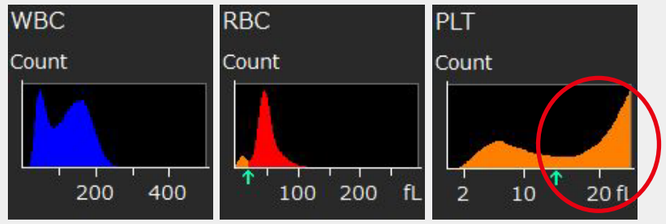
Scattergrams







Histograms



Explanation of scattergram/histogram

Low levels of HGB, HCT and MCV suggest microcytic hypochromic anemia. “Anemia” and “Microcytosis” flags indicating this are shown. Additionally, RDW-CV was abnormally high (26.5%), suggesting the appearance of RBCs of varying sizes. An “Anisocytosis” flag indicating this is shown. In addition, the PLT histogram shows a peak on the right side (◯), deviating from the normal pattern. Additionally, the “PLT-RBC Interference” flag indicates interference by platelets and RBCs, suggesting the presence of schistocytes and small RBCs. Similar to Case 8, the test results suggest microcytic hypochromic anemia; however, the Mentzer Index* (15) and RDWI** (393), which are for research use only, do not indicate thalassemia.

* Mentzer index = MCV/RBC[*1)]
<13: suspect thalassemia
13<: thalassemia is less likely

** RDWI = MCV x RDW/RBC[*2)]
<220: suspect thalassemia
220<: thalassemia is less likely

Reference
*1) Differentiation of iron deficiency from thalassaemia trait. The Lancet. 1973;1(7808):p. 882. PMID: 4123424
*2) Vehapoglu A, Ozgurhan G, Demir AD, Uzuner S, Nursoy MA, Turkmen S, et al. Hematological indices for differential diagnosis of beta thalassemia trait and iron deficiency anemia. Anemia. 2014;10(5):1–7. doi:10.1155/2014/576738.

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