SUMMARY STATISTICS

EQA round: NKDF1/22 - Bone Marrow Aspirate Film

Deadline (EQA round closed): 27.05.2022

Professional supervision: Czech Haematological Society

Key: >>> ... marks correct (expected) result
> ... marks conditionally correct (acceptable) result

Patient A

Photo 1

Object no. 1	Nuclear cells - type of cells	>	13	Erythropoiesis: Polychromatophil erythroblast	24 %
		>>>	41	Erythropoiesis: Orthochromatic erythroblast	76 %
	Nuclear cells - morphology		1	Granulopoiesis: Cytoplasmatic vacuolisation	1,9 %
			5	Erythropoiesis: Normal finding	9,3 %
			1	Erythropoiesis: Nucleus karyorrhexis / lobulisation / fragmentation	1,9 %
			2	Erythropoiesis: Pycnosis of nucleus	3,7 %
		>>>	41	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	76 %
		>	15	Erythropoiesis: Cytoplasmatic vacuolisation	28 %
			1	Erythropoiesis: Basophilic stippling	1,9 %
		>	7	Erythropoiesis: Nucleocytoplasmatic asynchrony	13 %
			1	Erythropoiesis: Macroerythroblast	1,9 %
			1	Erythropoiesis: Microerythroblast	1,9 %
			1	Erythropoiesis: Pappenheimer bodies	1,9 %
Object no. 2	Nuclear cells - type of cells		1	Erythropoiesis: Polychromatophil erythroblast	1,9 %
		>>>	21	Megakaryopoiesis: Megakaryoblast	39 %
			2	Megakaryopoiesis: Promegakaryocyte	3,7 %
			18	Megakaryopoiesis: Megakaryocyte	33 %
			1	Lymphocyte pop.: Prolymphocyte	1,9 %
			4	Lymphocyte pop.: Lymphocyte	7,4 %
		>	3	Other cells: Blast, unclassifiable	5,6 %
			1	Other cells: Macrophage	1,9 %
			1	Other cells: Nonhaematopoetic malignant cell	1,9 %
			2	Other cells: Bare nuclei / smudge cell	3,7 %
Object no. 3	Nuclear cells - type of cells	>>>	54	Other cells: Bare nuclei / smudge cell	100 %
Object no. 4	Nuclear cells - type of cells	>>>	37	Erythropoiesis: Basophilc erythroblast	69 %
			12	Erythropoiesis: Polychromatophil erythroblast	22 %
			1	Lymphocyte pop.: Prolymphocyte	1,9 %
			4	Lymphocyte pop.: Lymphocyte	7,4 %
	Nuclear cells - morphology		2	Granulopoiesis: Normal finding	3,7 %
		>>>	26	Erythropoiesis: Normal finding	48 %
			5	Erythropoiesis: Abnormal chromatin clumping	9,3 %
			3	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	5,6 %
		>	13	Erythropoiesis: Nucleocytoplasmatic asynchrony	24 %
			2	Erythropoiesis: Microerythroblast	3,7 %
			4	Lymphocyte pop.: Normal lymphocyte/plasmocyte	7,4 %
			1	Lymphocyte pop.: Patological lymphocyte	1,9 %
Object no. 5	Nuclear cells - type of cells	>>>	54	Erythropoiesis: Orthochromatic erythroblast	100 %
	Nuclear cells - morphology		1	Granulopoiesis: Nucleocytoplasmatic asynchrony	1,9 %
		>	19	Erythropoiesis: Bi-/multinuclearity	35 %
		>	32	Erythropoiesis: Nucleus karyorrhexis / lobulisation / fragmentation	59 %
		>	14	Erythropoiesis: Pycnosis of nucleus	26 %
		>>>	42	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	78 %
			7	Erythropoiesis: Cytoplasmatic vacuolisation	13 %
			5	Erythropoiesis: Nucleocytoplasmatic asynchrony	9,3 %

Patient A

Photo 1

Object no. 5	Nuclear cells - morphology		1	Erythropoiesis: Megaloerythroblast	1,9 %
			3	Erythropoiesis: Macroerythroblast	5,6 %

Photo 2

Object no. 1	Nuclear cells - type of cells	>>>	53	Other cells: Bare nuclei / smudge cell	98 %
Object no. 2	Nuclear cells - type of cells	>>>	22	Erythropoiesis: Basophilc erythroblast	41 %
		>	30	Erythropoiesis: Polychromatophil erythroblast	56 %
			1	Lymphocyte pop.: Lymphocyte	1,9 %
	Nuclear cells - morphology		1	Granulopoiesis: Nucleocytoplasmatic asynchrony	1,9 %
		>>>	23	Erythropoiesis: Normal finding	43 %
			1	Erythropoiesis: Pycnosis of nucleus	1,9 %
		>	17	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	31 %
		>	12	Erythropoiesis: Nucleocytoplasmatic asynchrony	22 %
			1	Lymphocyte pop.: Normal lymphocyte/plasmocyte	1,9 %
Object no. 3	Nuclear cells - type of cells		4	Granulopoiesis: Neutrophil metamyelocyte	7,4 %
			12	Granulopoiesis: Neutrophil bar	22 %
		>>>	34	Granulopoiesis: Neutrophil segment	63 %
			1	Erythropoiesis: Orthochromatic erythroblast	1,9 %
			1	Monocyte pop: Promonocyte	1,9 %
			1	Monocyte pop: Monocyte	1,9 %
	Nuclear cells - morphology	>>>	48	Granulopoiesis: Hypo-/agranularity	89 %
			5	Granulopoiesis: Neutrophil disgranularity	9,3 %
			2	Granulopoiesis: Cytoplasmatic vacuolisation	3,7 %
			12	Granulopoiesis: Nucleocytoplasmatic asynchrony	22 %
			2	Granulopoiesis: Megalostabs and megalometamyelocytes	3,7 %
			1	Granulopoiesis: Macropolycyte	1,9 %
		>>>	27	Granulopoiesis: Neutrophil and eosinophil hyposegmentation and acquired Pelger-Huët anomaly	50 %
			1	Erythropoiesis: Bi-/multinuclearity	1,9 %
			1	Monocyte pop: Normal finding	1,9 %
			1	Monocyte pop: Atypical/reactive monocyte	1,9 %
Object no. 4	Nuclear cells - type of cells		3	Megakaryopoiesis: Megakaryocyte	5,6 %
		>>>	50	Other cells: Macrophage	93 %
Object no. 5	Nuclear cells - type of cells	>>>	8	Erythropoiesis: Proerythroblast	15 %
		>	33	Erythropoiesis: Basophilc erythroblast	61 %
			2	Erythropoiesis: Polychromatophil erythroblast	3,7 %
			2	Megakaryopoiesis: Megakaryoblast	3,7 %
			5	Megakaryopoiesis: Megakaryocyte	9,3 %
			1	Lymphocyte pop.: Prolymphocyte	1,9 %
			2	Lymphocyte pop.: Lymphocyte	3,7 %
	Nuclear cells - morphology		1	Granulopoiesis: Nucleocytoplasmatic asynchrony	1,9 %
		>>>	19	Erythropoiesis: Normal finding	35 %
			3	Erythropoiesis: Abnormal chromatin clumping	5,6 %
			6	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	11 %
			11	Erythropoiesis: Nucleocytoplasmatic asynchrony	20 %
			1	Erythropoiesis: Macroerythroblast	1,9 %
			2	Erythropoiesis: Microerythroblast	3,7 %
			1	Megakaryopoiesis: Normal finding	1,9 %
			1	Megakaryopoiesis: Hypo-/monolobulisation of nucleus	1,9 %
			5	Megakaryopoiesis: Micro (mega) karyocyte	9,3 %
			2	Lymphocyte pop.: Normal lymphocyte/plasmocyte	3,7 %
			1	Lymphocyte pop.: Patological lymphocyte	1,9 %

General view and diagnosis

Cellularity	>>>	36	Normocellular	67 %
		6	Hypercellular	11 %
		11	Hypocellular	20 %
Granulopoiesis - count		4	Within physiological limits	7,4 %
		2	Increased	3,7 %
	>>>	47	Decreased	87 %
Granulopoiesis - morphology	>>>	53	Dyspalstic granulopoiesis	98 %
Erythropoiesis - count		5	Within physiological limits	9,3 %
	>>>	46	Increased	85 %

Patient A

General view and diagnosis

Erythropoiesis - count		2	Decreased	3,7 %
Erythropoiesis - morphology	>>>	53	Dysplastic erythropoiesis	98 %
Lymphopoiesis - count	>>>	40	Within physiological limits	74 %
		3	Increased	5,6 %
		10	Decreased	19 %
Lymphopoiesis - morphology	>>>	43	No significant changes	80 %
		5	Reactive changes/iritations	9,3 %
		5	Pathological lymphopoiesis	9,3 %
Megakaryopoiesis - count	>>>	42	Within physiological limits	78 %
		11	Increased	20 %
Megakaryopoiesis - morphology	>>>	51	Dysplastic megakaryopoiesis	94 %
		1	Atypical megakaryopoiesis	1,9 %
		1	Pathological (clonal) megakaryopoiesis	1,9 %
Estimation of diagnosis		18	MDS-MLD (MDS with multilineage dysplasia)	33 %
	>>>	30	MDS-EB (MDS with excess blasts)	56 %
		2	MDS with isolated del(5q)	3,7 %
		1	Acute myeloid leukaemia - all types according to WHO (excl. APL)	1,9 %
		1	Mature B and T lymphocytes neoplasms (unclassifiable)	1,9 %
		1	Metastatic impairment of bone marrow	1,9 %

Patient B

Photo 1

Object no. 1	Nuclear cells - type of cells	>>>	45	Granulopoiesis: Promyelocyte	83 %
			8	Granulopoiesis: Neutrophil myelocyte	15 %
	Nuclear cells - morphology	>>>	23	Granulopoiesis: Normal finding	43 %
		>	12	Granulopoiesis: Hypergranularity/toxic granulation	22 %
			1	Granulopoiesis: Neutrophil disgranularity	1,9 %
		>	25	Granulopoiesis: Cytoplasmatic vacuolisation	46 %
			1	Granulopoiesis: Nucleocytoplasmatic asynchrony	1,9 %
			1	Granulopoiesis: Abnormal chromatin clumping	1,9 %
Object no. 2	Nuclear cells - type of cells	>>>	53	Lymphocyte pop.: Plasmocyte	98 %
	Nuclear cells - morphology		8	Lymphocyte pop.: Normal lymphocyte/plasmocyte	15 %
		>>>	45	Lymphocyte pop.: Patological plasmocyte/plasmablast	83 %
Object no. 3	Nuclear cells - type of cells		2	Erythropoiesis: Basophilc erythroblast	3,7 %
		>>>	50	Erythropoiesis: Polychromatophil erythroblast	93 %
			1	Lymphocyte pop.: Lymphocyte	1,9 %
	Nuclear cells - morphology	>	22	Erythropoiesis: Normal finding	41 %
		>	27	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	50 %
			1	Erythropoiesis: Cytoplasmatic vacuolisation	1,9 %
			2	Erythropoiesis: Nucleocytoplasmatic asynchrony	3,7 %
			1	Lymphocyte pop.: Patological lymphocyte	1,9 %
Object no. 4	Nuclear cells - type of cells	>>>	52	Lymphocyte pop.: Lymphocyte	96 %
			1	Lymphocyte pop.: Plasmocyte	1,9 %
	Nuclear cells - morphology		2	Granulopoiesis: Normal finding	3,7 %
		>>>	46	Lymphocyte pop.: Normal lymphocyte/plasmocyte	85 %
			2	Lymphocyte pop.: Patological lymphocyte	3,7 %
			1	Lymphocyte pop.: Patological plasmocyte/plasmablast	1,9 %
Object no. 5	Nuclear cells - type of cells		6	Granulopoiesis: Neutrophil metamyelocyte	11 %
		>>>	40	Granulopoiesis: Neutrophil bar	74 %
			7	Monocyte pop: Monocyte	13 %
	Nuclear cells - morphology		15	Granulopoiesis: Normal finding	28 %
		>>>	27	Granulopoiesis: Hypo-/agranularity	50 %
			1	Granulopoiesis: Cytoplasmatic vacuolisation	1,9 %
			5	Granulopoiesis: Nucleocytoplasmatic asynchrony	9,3 %
			1	Granulopoiesis: Megalostabs and megalometamyelocytes	1,9 %
			2	Granulopoiesis: Abnormal chromatin clumping	3,7 %
			6	Monocyte pop: Normal finding	11 %
			1	Monocyte pop: Atypical/reactive monocyte	1,9 %

Photo 2

Object no. 1	Nuclear cells - type of cells		1	Granulopoiesis: Neutrophil myelocyte	1,9 %
		>>>	49	Granulopoiesis: Neutrophil metamyelocyte	91 %

Patient B

Photo 2

Object no. 1	Nuclear cells - type of cells		3	Granulopoiesis: Eosinophil metamyelocyte	5,6 %
	Nuclear cells - morphology	>>>	31	Granulopoiesis: Normal finding	57 %
		>	9	Granulopoiesis: Hypo-/agranularity	17 %
			1	Granulopoiesis: Neutrophil disgranularity	1,9 %
		>	8	Granulopoiesis: Nucleocytoplasmatic asynchrony	15 %
			5	Granulopoiesis: Abnormal chromatin clumping	9,3 %
			4	Granulopoiesis: Döhle bodies	7,4 %
Object no. 2	Nuclear cells - type of cells		1	Lymphocyte pop.: Plasmocyte	1,9 %
		>>>	51	Other cells: Macrophage	94 %
			1	Other cells: Osteoclast	1,9 %
Object no. 3	Nuclear cells - type of cells		1	Granulopoiesis: Neutrophil segment	1,9 %
			12	Lymphocyte pop.: Lymphocyte	22 %
			2	Lymphocyte pop.: Plasmocyte	3,7 %
			1	Monocyte pop: Promonocyte	1,9 %
		>>>	37	Monocyte pop: Monocyte	69 %
	Nuclear cells - morphology		1	Granulopoiesis: Neutrophil and eosinophil hyposegmentation and acquired Pelger-Huët anomaly	1,9 %
			11	Lymphocyte pop.: Patological lymphocyte	20 %
			2	Lymphocyte pop.: Patological plasmocyte/plasmablast	3,7 %
		>>>	25	Monocyte pop: Normal finding	46 %
			11	Monocyte pop: Atypical/reactive monocyte	20 %
Object no. 4	Nuclear cells - type of cells	>>>	53	Lymphocyte pop.: Plasmocyte	98 %
	Nuclear cells - morphology		8	Lymphocyte pop.: Normal lymphocyte/plasmocyte	15 %
			16	Lymphocyte pop.: Cytoplasmatic vacuolisation	30 %
		>>>	41	Lymphocyte pop.: Patological plasmocyte/plasmablast	76 %
Object no. 5	Nuclear cells - type of cells		14	Erythropoiesis: Polychromatophil erythroblast	26 %
		>>>	39	Erythropoiesis: Orthochromatic erythroblast	72 %
	Nuclear cells - morphology		3	Granulopoiesis: Normal finding	5,6 %
		>>>	36	Erythropoiesis: Normal finding	67 %
			1	Erythropoiesis: Pycnosis of nucleus	1,9 %
			2	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	3,7 %
			5	Erythropoiesis: Howell-Jolly bodies	9,3 %
			2	Erythropoiesis: Basophilic stippling	3,7 %
			4	Erythropoiesis: Nucleocytoplasmatic asynchrony	7,4 %
			1	Erythropoiesis: Microerythroblast	1,9 %
			4	Erythropoiesis: Pappenheimer bodies	7,4 %

General view and diagnosis

Cellularity	>>>	32	Normocellular	59 %
	>>>	21	Hypocellular	39 %
Granulopoiesis - count		19	Within physiological limits	35 %
		1	Increased	1,9 %
	>>>	33	Decreased	61 %
Granulopoiesis - morphology	>>>	46	No significant changes	85 %
		4	Dyspalstic granulopoiesis	7,4 %
		3	Atypical/toxic granulopoiesis	5,6 %
Erythropoiesis - count	>>>	41	Within physiological limits	76 %
		1	Increased	1,9 %
		11	Decreased	20 %
Erythropoiesis - morphology	>>>	48	No significant changes	89 %
		2	Dysplastic erythropoiesis	3,7 %
		3	Atypical erythropoiesis	5,6 %
Lymphopoiesis - count		6	Within physiological limits	11 %
	>>>	47	Increased	87 %
Lymphopoiesis - morphology		3	No significant changes	5,6 %
	>>>	50	Pathological lymphopoiesis	93 %
Monocytopoiesis - count	>>>	50	Within physiological limits	93 %
		3	Increased	5,6 %
Monocytopoiesis - morphology	>>>	51	No significant changes / reactive changes	94 %
		2	Pathological monocytopoiesis	3,7 %
Estimation of diagnosis	>>>	52	Plasma cell myelom/MGUS	96 %
		1	Lymphoplasmacytic lympoma / M.Waldenström	1,9 %

Evaluation of the results - scoring system **NKDF1/22**

Patient A	**Photo A1**	**Photo A2**	**General view**
Maximal achievable score:	**52**	**56**	**22**
Successful participants (success 60 % and more):	33 (it is 61 %)	21 (it is 39 %)	30 (it is 56 %)
Minimal success in this round:	11,5 %	0,0 %	0,0 %
Maximal success in this round:	100,0 %	96,4 %	100,0 %

Patient B	**Photo B1**	**Photo B2**	**General view**
Maximal achievable score:	**56**	**56**	**22**
Successful participants (success 60 % and more):	46 (it is 85 %)	36 (it is 67 %)	49 (it is 91 %)
Minimal success in this round:	0,0 %	0,0 %	0,0 %
Maximal success in this round:	100,0 %	100,0 %	100,0 %

	Number of participants:	**54**
Number of the participants that succeeded:	in all 6 tests:	9 (it is 17 %)
	in 5 tests:	16 (it is 30 %)
	in 4 tests:	9 (it is 17 %)
	in 3 tests:	12 (it is 22 %)
	in 2 tests:	3 (it is 6 %)
	in 1 test:	3 (it is 6 %)
	in no test:	2 (it is 4 %)