SUMMARY STATISTICS

EQA round: NKDF2/18 - Bone Marrow Aspirate Film

Dead line (EQA round closed): 30.11.2018

Professional supervision: Czech Haematological Society
National Reference Laboratory for Haematology

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

Patient A

Photo 1

Object no. 1	Nuclear cells - type of cells		3	Granulopoiesis: Neutrophil myelocyte	6,5 %
		>>>	43	Granulopoiesis: Neutrophil metamyelocyte	93 %
	Nuclear cells - morphology	>>>	43	Granulopoiesis: Normal finding	93 %
			1	Granulopoiesis: Hypo-/agranularity	2,2 %
			3	Granulopoiesis: Cytoplasmatic vacuolisation	6,5 %
Object no. 2	Nuclear cells - type of cells		1	Erythropoiesis: Proerythroblast	2,2 %
		>>>	42	Erythropoiesis: Basophilc erythroblast	91 %
			1	Erythropoiesis: Polychromatophil erythroblast	2,2 %
			1	Lymphocyte pop.: Lymphocyte	2,2 %
			1	Lymphocyte pop.: Plasmocyte	2,2 %
	Nuclear cells - morphology		2	Granulopoiesis: Normal finding	4,3 %
		>>>	39	Erythropoiesis: Normal finding	85 %
			3	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	6,5 %
			1	Lymphocyte pop.: Patological lymphocyte	2,2 %
			1	Lymphocyte pop.: Patological plasmocyte/plasmablast	2,2 %
Object no. 3	Nuclear cells - type of cells	>>>	41	Erythropoiesis: Proerythroblast	89 %
			3	Erythropoiesis: Basophilc erythroblast	6,5 %
			2	Lymphocyte pop.: Plasmocyte	4,3 %
	Nuclear cells - morphology		3	Granulopoiesis: Normal finding	6,5 %
		>>>	38	Erythropoiesis: Normal finding	83 %
			3	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	6,5 %
			2	Lymphocyte pop.: Patological plasmocyte/plasmablast	4,3 %
Object no. 4	Nuclear cells - type of cells	>>>	45	Granulopoiesis: Neutrophil bar	98 %
			1	Granulopoiesis: Neutrophil segment	2,2 %
	Nuclear cells - morphology	>	37	Granulopoiesis: Normal finding	80 %
			2	Granulopoiesis: Hypo-/agranularity	4,3 %
			1	Granulopoiesis: Neutrophil disgranularity	2,2 %
			1	Granulopoiesis: Cytoplasmatic vacuolisation	2,2 %
		>>>	5	Granulopoiesis: Abnormal chromatin clumping	11 %
Object no. 5	Nuclear cells - type of cells	>>>	46	Lymphocyte pop.: Plasmocyte	100 %
	Nuclear cells - morphology		17	Lymphocyte pop.: Normal lymphocyte/plasmocyte	37 %
		>>>	29	Lymphocyte pop.: Patological plasmocyte/plasmablast	63 %

Photo 2

Object no. 1	Nuclear cells - type of cells		13	Erythropoiesis: Polychromatophil erythroblast	28 %
		>>>	32	Erythropoiesis: Orthochromatic erythroblast	70 %
			1	Lymphocyte pop.: Lymphocyte	2,2 %
	Nuclear cells - morphology		3	Granulopoiesis: Normal finding	6,5 %
			1	Granulopoiesis: Nucleocytoplasmatic asynchrony	2,2 %
			1	Granulopoiesis: Abnormal promyelocyte	2,2 %
		>	15	Erythropoiesis: Normal finding	33 %
			3	Erythropoiesis: Pycnosis of nucleus	6,5 %
		>>>	17	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	37 %
		>	9	Erythropoiesis: Nucleocytoplasmatic asynchrony	20 %
			2	Erythropoiesis: Microerythroblast	4,3 %
			1	Lymphocyte pop.: Normal lymphocyte/plasmocyte	2,2 %
Object no. 2	Nuclear cells - type of cells	>>>	44	Granulopoiesis: Neutrophil segment	96 %
			2	Granulopoiesis: Eosinophil segment	4,3 %

Patient A

Photo 2

Object no. 2	Nuclear cells - morphology	>>>	28	Granulopoiesis: Normal finding	61 %
			1	Granulopoiesis: Hypergranularity/toxic granulation	2,2 %
			1	Granulopoiesis: Neutrophil disgranularity	2,2 %
		>	10	Granulopoiesis: Cytoplasmatic vacuolisation	22 %
			3	Granulopoiesis: Neutrophil hypersegmentation	6,5 %
			2	Granulopoiesis: Eosinophil hypersegmentation	4,3 %
		>	1	Granulopoiesis: Abnormal chromatin clumping	2,2 %
			1	Erythropoiesis: Normal finding	2,2 %
Object no. 3	Nuclear cells - type of cells	>>>	43	Granulopoiesis: Eosinophil stab	93 %
		>	3	Granulopoiesis: Eosinophil segment	6,5 %
	Nuclear cells - morphology	>>>	45	Granulopoiesis: Normal finding	98 %
			1	Erythropoiesis: Normal finding	2,2 %
Object no. 4	Nuclear cells - type of cells		1	Erythropoiesis: Basophilc erythroblast	2,2 %
		>>>	45	Lymphocyte pop.: Plasmocyte	98 %
	Nuclear cells - morphology		1	Erythropoiesis: Macroerythroblast	2,2 %
			4	Lymphocyte pop.: Normal lymphocyte/plasmocyte	8,7 %
		>>>	41	Lymphocyte pop.: Patological plasmocyte/plasmablast	89 %
Object no. 5	Nuclear cells - type of cells		4	Granulopoiesis: Promyelocyte	8,7 %
		>>>	41	Granulopoiesis: Neutrophil myelocyte	89 %
			1	Granulopoiesis: Eosinophil myelocyte	2,2 %
	Nuclear cells - morphology		6	Granulopoiesis: Normal finding	13 %
			6	Granulopoiesis: Hypo-/agranularity	13 %
		>>>	32	Granulopoiesis: Neutrophil disgranularity	70 %
		>	26	Granulopoiesis: Cytoplasmatic vacuolisation	57 %
			4	Granulopoiesis: Nucleocytoplasmatic asynchrony	8,7 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %

General view and diagnosis

Cellularity	>>>	40	Normocellular	87 %
		6	Hypocellular	13 %
Granulopoiesis - count		13	Within physiological limits	28 %
	>>>	33	Decreased	72 %
Granulopoiesis - morphology	>>>	36	No significant changes	78 %
		9	Dyspalstic granulopoiesis	20 %
		1	Atypical/toxic granulopoiesis	2,2 %
Erythropoiesis - count		3	Within physiological limits	6,5 %
	>>>	43	Decreased	93 %
Erythropoiesis - morphology	>>>	36	No significant changes	78 %
		6	Dysplastic erythropoiesis	13 %
		1	Macroerythroblastic erythropoiesis	2,2 %
		3	Atypical erythropoiesis	6,5 %
Lymphopoiesis - count		2	Within physiological limits	4,3 %
	>>>	38	Increased	83 %
		6	Decreased	13 %
Lymphopoiesis - morphology		7	No significant changes	15 %
	>>>	39	Pathological lymphopoiesis	85 %
Monocytopoiesis - count	>>>	45	Within physiological limits	98 %
		1	Increased	2,2 %
Monocytopoiesis - morphology	>>>	46	No significant changes	100 %
Estimation of diagnosis	>>>	45	Plasma cell myelom/MGUS	98 %
		1	Lymphoplasmacytic lympoma / M.Waldenström	2,2 %

Patient B

Photo 1

Object no. 1	Nuclear cells - type of cells	>>>	44	Granulopoiesis: Promyelocyte	96 %
			1	Granulopoiesis: Neutrophil myelocyte	2,2 %
			1	Megakaryopoiesis: Megakaryoblast	2,2 %
	Nuclear cells - morphology		6	Granulopoiesis: Hypergranularity/toxic granulation	13 %
			1	Granulopoiesis: Nucleocytoplasmatic asynchrony	2,2 %
			5	Granulopoiesis: Auer rods	11 %
		>>>	44	Granulopoiesis: Abnormal promyelocyte	96 %
			1	Megakaryopoiesis: Normal finding	2,2 %
Object no. 2	Nuclear cells - type of cells		1	Erythropoiesis: Polychromatophil erythroblast	2,2 %
		>>>	45	Erythropoiesis: Orthochromatic erythroblast	98 %
	Nuclear cells - morphology		2	Erythropoiesis: Normal finding	4,3 %

Patient B

Photo 1

Object no. 2	Nuclear cells - morphology		4	Erythropoiesis: Bi-/multinuclearity	8,7 %
		>>>	27	Erythropoiesis: Nucleus karyorrhexis / lobulisation / fragmentation	59 %
		>>>	22	Erythropoiesis: Pycnosis of nucleus	48 %
		>	10	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	22 %
			2	Erythropoiesis: Cytoplasmatic vacuolisation	4,3 %
			4	Erythropoiesis: Nucleocytoplasmatic asynchrony	8,7 %
		>	3	Erythropoiesis: Macroerythroblast	6,5 %
Object no. 3	Nuclear cells - type of cells		14	Granulopoiesis: Promyelocyte	30 %
		>>>	26	Granulopoiesis: Neutrophil myelocyte	57 %
			6	Granulopoiesis: Neutrophil metamyelocyte	13 %
	Nuclear cells - morphology	>	24	Granulopoiesis: Normal finding	52 %
		>	6	Granulopoiesis: Hypo-/agranularity	13 %
			1	Granulopoiesis: Hypergranularity/toxic granulation	2,2 %
		>	8	Granulopoiesis: Neutrophil disgranularity	17 %
			1	Granulopoiesis: Cytoplasmatic vacuolisation	2,2 %
		>>>	10	Granulopoiesis: Nucleocytoplasmatic asynchrony	22 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %
			1	Granulopoiesis: Abnormal promyelocyte	2,2 %
Object no. 4	Nuclear cells - type of cells		4	Erythropoiesis: Basophilc erythroblast	8,7 %
		>>>	42	Erythropoiesis: Polychromatophil erythroblast	91 %
	Nuclear cells - morphology	>>>	15	Erythropoiesis: Normal finding	33 %
			1	Erythropoiesis: Nucleus karyorrhexis / lobulisation / fragmentation	2,2 %
			3	Erythropoiesis: Abnormal chromatin clumping	6,5 %
		>	22	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	48 %
			3	Erythropoiesis: Cytoplasmatic vacuolisation	6,5 %
			4	Erythropoiesis: Nucleocytoplasmatic asynchrony	8,7 %
			2	Erythropoiesis: Megaloerythroblast	4,3 %
		>	10	Erythropoiesis: Macroerythroblast	22 %
Object no. 5	Nuclear cells - type of cells	>>>	34	Granulopoiesis: Myeloblast	74 %
			2	Granulopoiesis: Promyelocyte	4,3 %
			1	Megakaryopoiesis: Megakaryoblast	2,2 %
		>	9	Other cells: Blast, unclassifiable	20 %

Photo 2

Object no. 1	Nuclear cells - type of cells		1	Granulopoiesis: Myeloblast	2,2 %
		>>>	34	Granulopoiesis: Promyelocyte	74 %
			10	Granulopoiesis: Neutrophil myelocyte	22 %
			1	Granulopoiesis: Neutrophil segment	2,2 %
	Nuclear cells - morphology		2	Granulopoiesis: Hypergranularity/toxic granulation	4,3 %
			2	Granulopoiesis: Neutrophil disgranularity	4,3 %
		>>>	23	Granulopoiesis: Cytoplasmatic vacuolisation	50 %
			2	Granulopoiesis: Nucleocytoplasmatic asynchrony	4,3 %
			1	Granulopoiesis: Neutrophil and eosinophil hyposegmentation and acquired Pelger-Huët anomaly	2,2 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %
		>>>	45	Granulopoiesis: Auer rods	98 %
		>>>	34	Granulopoiesis: Abnormal promyelocyte	74 %
Object no. 2	Nuclear cells - type of cells		1	Granulopoiesis: Neutrophil segment	2,2 %
			3	Lymphocyte pop.: Lymphocyte	6,5 %
		>>>	26	Lymphocyte pop.: Plasmocyte	57 %
			11	Other cells: Macrophage	24 %
			4	Other cells: Osteoblast	8,7 %
			1	Other cells: Osteoclast	2,2 %
	Nuclear cells - morphology		1	Granulopoiesis: Hypo-/agranularity	2,2 %
			1	Granulopoiesis: Nucleocytoplasmatic asynchrony	2,2 %
			1	Granulopoiesis: Neutrophil and eosinophil hyposegmentation and acquired Pelger-Huët anomaly	2,2 %
			1	Erythropoiesis: Normal finding	2,2 %
		>>>	18	Lymphocyte pop.: Normal lymphocyte/plasmocyte	39 %
			5	Lymphocyte pop.: Reactive lymphocyte	11 %

Patient B

Photo 2

Object no. 2	Nuclear cells - morphology		6	Lymphocyte pop.: Patological plasmocyte/plasmablast	13 %
			1	Monocyte pop: Normal finding	2,2 %
			2	Other cells: Sea-blue macrophage	4,3 %
Object no. 3	Nuclear cells - type of cells		2	Granulopoiesis: Promyelocyte	4,3 %
		>>>	33	Granulopoiesis: Eosinophil myelocyte	72 %
		>	9	Granulopoiesis: Eosinophil metamyelocyte	20 %
			2	Granulopoiesis: Eosinophil stab	4,3 %
	Nuclear cells - morphology	>>>	23	Granulopoiesis: Normal finding	50 %
		>	14	Granulopoiesis: Hypergranularity/toxic granulation	30 %
			2	Granulopoiesis: Neutrophil disgranularity	4,3 %
			4	Granulopoiesis: Nucleocytoplasmatic asynchrony	8,7 %
			2	Granulopoiesis: Abnormal chromatin clumping	4,3 %
			2	Granulopoiesis: Auer rods	4,3 %
			2	Granulopoiesis: Abnormal promyelocyte	4,3 %
Object no. 4	Nuclear cells - type of cells	>>>	46	Granulopoiesis: Neutrophil segment	100 %
	Nuclear cells - morphology		5	Granulopoiesis: Normal finding	11 %
		>>>	29	Granulopoiesis: Hypo-/agranularity	63 %
		>>>	37	Granulopoiesis: Cytoplasmatic vacuolisation	80 %
			1	Granulopoiesis: Neutrophil and eosinophil hyposegmentation and acquired Pelger-Huët anomaly	2,2 %
			3	Granulopoiesis: Abnormal chromatin clumping	6,5 %
Object no. 5	Nuclear cells - type of cells		1	Erythropoiesis: Proerythroblast	2,2 %
		>>>	45	Erythropoiesis: Basophilc erythroblast	98 %
	Nuclear cells - morphology		1	Granulopoiesis: Normal finding	2,2 %
		>>>	37	Erythropoiesis: Normal finding	80 %
			1	Erythropoiesis: Abnormal chromatin clumping	2,2 %
			3	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	6,5 %
			3	Erythropoiesis: Cytoplasmatic vacuolisation	6,5 %
			2	Erythropoiesis: Macroerythroblast	4,3 %
			1	Erythropoiesis: Microerythroblast	2,2 %

General view and diagnosis

Cellularity		3	Normocellular	6,5 %
	>>>	43	Hypercellular	93 %
Granulopoiesis - count		38	Increased	83 %
	>>>	8	Decreased	17 %
Granulopoiesis - morphology		2	No significant changes	4,3 %
	>>>	29	Dyspalstic granulopoiesis	63 %
	>	14	Atypical/toxic granulopoiesis	30 %
Erythropoiesis - count		2	Within physiological limits	4,3 %
	>>>	44	Decreased	96 %
Erythropoiesis - morphology	>	16	No significant changes	35 %
	>>>	29	Dysplastic erythropoiesis	63 %
		1	Macroerythroblastic erythropoiesis	2,2 %
Lymphopoiesis - count		8	Within physiological limits	17 %
	>>>	38	Decreased	83 %
Lymphopoiesis - morphology	>>>	44	No significant changes	96 %
		2	Reactive changes/iritations	4,3 %
Estimation of diagnosis		1	Acute myeloid leukaemia - all types according to WHO (excl. APL)	2,2 %
	>>>	45	APL (acute promyelocytic leukaemia)	98 %

Evaluation of the results - scoring system **NKDF2/18**

Patient A	**Photo A1**	**Photo A2**	**General view**
Maximal achievable score:	**60**	**60**	**22**
Successful participants (success 60 % and more):	42 (it is 91 %)	38 (it is 83 %)	38 (it is 83 %)
Minimal success in this round:	23,3 %	16,7 %	31,8 %
Maximal success in this round:	100,0 %	100,0 %	100,0 %

Patient B	**Photo B1**	**Photo B2**	**General view**
Maximal achievable score:	**60**	**72**	**18**
Successful participants (success 60 % and more):	36 (it is 78 %)	33 (it is 72 %)	35 (it is 76 %)
Minimal success in this round:	3,3 %	13,9 %	38,9 %
Maximal success in this round:	86,7 %	97,2 %	100,0 %

	Number of participants:	**46**
Number of participants that succeeded:	in all 6 tests:	18 (it is 39 %)
	in 5 tests:	14 (it is 30 %)
	in 4 tests:	7 (it is 15 %)
	in 3 tests:	4 (it is 9 %)
	in 2 tests:	1 (it is 2 %)
	in 1 test:	2 (it is 4 %)
	in no test:	0 (it is 0 %)