SUMMARY STATISTICS

EQA round: NKDF2/20 - Bone Marrow Aspirate Film

Deadline (EQA round closed): 20.11.2020

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		2	Granulopoiesis: Promyelocyte	4,4 %
		>>>	39	Granulopoiesis: Neutrophil myelocyte	87 %
			4	Granulopoiesis: Neutrophil metamyelocyte	8,9 %
	Nuclear cells - morphology	>	10	Granulopoiesis: Normal finding	22 %
		>>>	24	Granulopoiesis: Hypo-/agranularity	53 %
			1	Granulopoiesis: Hypergranularity/toxic granulation	2,2 %
			6	Granulopoiesis: Neutrophil disgranularity	13 %
			6	Granulopoiesis: Cytoplasmatic vacuolisation	13 %
		>	15	Granulopoiesis: Nucleocytoplasmatic asynchrony	33 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %
Object no. 2	Nuclear cells - type of cells	>>>	32	Granulopoiesis: Promyelocyte	71 %
			13	Granulopoiesis: Neutrophil myelocyte	29 %
	Nuclear cells - morphology	>>>	19	Granulopoiesis: Normal finding	42 %
			4	Granulopoiesis: Hypo-/agranularity	8,9 %
			2	Granulopoiesis: Hypergranularity/toxic granulation	4,4 %
			6	Granulopoiesis: Neutrophil disgranularity	13 %
		>	17	Granulopoiesis: Cytoplasmatic vacuolisation	38 %
			6	Granulopoiesis: Nucleocytoplasmatic asynchrony	13 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %
Object no. 3	Nuclear cells - type of cells	>>>	45	Lymphocyte pop.: Plasmocyte	100 %
	Nuclear cells - morphology	>>>	43	Lymphocyte pop.: Normal lymphocyte/plasmocyte	96 %
			2	Lymphocyte pop.: Patological plasmocyte/plasmablast	4,4 %
Object no. 4	Nuclear cells - type of cells	>>>	34	Erythropoiesis: Basophilc erythroblast	76 %
			6	Erythropoiesis: Polychromatophil erythroblast	13 %
			4	Lymphocyte pop.: Lymphocyte	8,9 %
			1	Lymphocyte pop.: Plasmocyte	2,2 %
	Nuclear cells - morphology	>	31	Erythropoiesis: Normal finding	69 %
			2	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	4,4 %
			4	Erythropoiesis: Nucleocytoplasmatic asynchrony	8,9 %
		>>>	2	Erythropoiesis: Microerythroblast	4,4 %
			3	Lymphocyte pop.: Normal lymphocyte/plasmocyte	6,7 %
			1	Lymphocyte pop.: Reactive lymphocyte	2,2 %
			1	Lymphocyte pop.: Patological lymphocyte	2,2 %
Object no. 5	Nuclear cells - type of cells		2	Megakaryopoiesis: Megakaryocyte	4,4 %
		>>>	42	Other cells: Macrophage	93 %
			1	Other cells: Nonhaematopoetic malignant cell	2,2 %

Photo 2

Object no. 1	Nuclear cells - type of cells	>>>	39	Granulopoiesis: Neutrophil myelocyte	87 %
			2	Granulopoiesis: Neutrophil metamyelocyte	4,4 %
			4	Granulopoiesis: Eosinophil myelocyte	8,9 %
	Nuclear cells - morphology	>	8	Granulopoiesis: Normal finding	18 %
		>	13	Granulopoiesis: Hypo-/agranularity	29 %
			2	Granulopoiesis: Hypergranularity/toxic granulation	4,4 %
		>>>	22	Granulopoiesis: Neutrophil disgranularity	49 %
			3	Granulopoiesis: Cytoplasmatic vacuolisation	6,7 %
			10	Granulopoiesis: Nucleocytoplasmatic asynchrony	22 %
Object no. 2	Nuclear cells - type of cells	>>>	45	Lymphocyte pop.: Plasmocyte	100 %
	Nuclear cells - morphology		1	Granulopoiesis: Cytoplasmatic vacuolisation	2,2 %

Patient A

Photo 2

Object no. 2	Nuclear cells - morphology	>>>	40	Lymphocyte pop.: Normal lymphocyte/plasmocyte	89 %
			4	Lymphocyte pop.: Patological plasmocyte/plasmablast	8,9 %
Object no. 3	Nuclear cells - type of cells	>>>	45	Erythropoiesis: Proerythroblast	100 %
	Nuclear cells - morphology	>>>	31	Erythropoiesis: Normal finding	69 %
			1	Erythropoiesis: Abnormal chromatin clumping	2,2 %
			3	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	6,7 %
		>	13	Erythropoiesis: Cytoplasmatic vacuolisation	29 %
Object no. 4	Nuclear cells - type of cells	>>>	45	Lymphocyte pop.: Lymphocyte	100 %
	Nuclear cells - morphology	>>>	45	Lymphocyte pop.: Normal lymphocyte/plasmocyte	100 %
Object no. 5	Nuclear cells - type of cells		1	Granulopoiesis: Neutrophil metamyelocyte	2,2 %
		>>>	43	Granulopoiesis: Neutrophil bar	96 %
			1	Granulopoiesis: Neutrophil segment	2,2 %
	Nuclear cells - morphology	>>>	42	Granulopoiesis: Hypo-/agranularity	93 %
		>>>	42	Granulopoiesis: Cytoplasmatic vacuolisation	93 %
			1	Granulopoiesis: Neutrophil and eosinophil hyposegmentation and acquired Pelger-Huët anomaly	2,2 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %

General view and diagnosis

Cellularity			9	Normocellular	20 %
		>>>	35	Hypercellular	78 %
			1	Hypocellular	2,2 %
Granulopoiesis - count		>>>	29	Within physiological limits	64 %
		>	15	Increased	33 %
			1	Decreased	2,2 %
Granulopoiesis - morphology		>>>	17	No significant changes	38 %
			18	Dyspalstic granulopoiesis	40 %
		>	9	Atypical/toxic granulopoiesis	20 %
			1	Pathological (clonal) granulopoiesis	2,2 %
Erythropoiesis - count		>>>	42	Within physiological limits	93 %
			1	Increased	2,2 %
			2	Decreased	4,4 %
Erythropoiesis - morphology			1	Microerythroblastic erythropoiesis	2,2 %
		>	33	No significant changes	73 %
			6	Dysplastic erythropoiesis	13 %
		>>>	5	Atypical erythropoiesis	11 %
Lymphopoiesis - count		>>>	38	Within physiological limits	84 %
			4	Increased	8,9 %
			3	Decreased	6,7 %
Lymphopoiesis - morphology		>	29	No significant changes	64 %
		>>>	14	Reactive changes/iritations	31 %
			2	Pathological lymphopoiesis	4,4 %
Monocytopoiesis - count		>>>	43	Within physiological limits	96 %
		>	2	Increased	4,4 %
Monocytopoiesis - morphology		>>>	45	No significant changes / reactive changes	100 %
Megakaryopoiesis - count		>>>	28	Within physiological limits	62 %
		>	17	Increased	38 %
Megakaryopoiesis - morphology		>>>	36	No significant changes	80 %
			6	Dysplastic megakaryopoiesis	13 %
			3	Atypical megakaryopoiesis	6,7 %
Estimation of diagnosis			3	Unable to determine the diagnosis	6,7 %
		>>>	31	ACD (anaemia of chronic diseases)	69 %
			1	Sideropenic anaemia	2,2 %
			2	Anaemia - unclassifiable	4,4 %
			1	Myeloproliferative disorder (unclassifiable)	2,2 %
			1	MDS-MLD (MDS with multilineage dysplasia)	2,2 %
			1	MDS with isolated del(5q)	2,2 %
			2	Myelodysplastic syndrome (unclassifiable)	4,4 %
			1	Plasma cell myelom/MGUS	2,2 %
			1	Post therapeutic/post infectious changes	2,2 %
			1	Metastatic impairment of bone marrow	2,2 %

Patient B

Photo 1

Object no. 1	Nuclear cells - type of cells		2	Granulopoiesis: Neutrophil metamyelocyte	4,4 %
		>>>	43	Granulopoiesis: Neutrophil bar	96 %
	Nuclear cells - morphology		2	Granulopoiesis: Normal finding	4,4 %
			5	Granulopoiesis: Hypo-/agranularity	11 %
			3	Granulopoiesis: Cytoplasmatic vacuolisation	6,7 %
			2	Granulopoiesis: Nucleocytoplasmatic asynchrony	4,4 %
		>>>	43	Granulopoiesis: Megalostabs and megalometamyelocytes	96 %
Object no. 2	Nuclear cells - type of cells	>>>	45	Other cells: Bare nuclei / smudge cell	100 %
Object no. 3	Nuclear cells - type of cells		1	Granulopoiesis: Basophil myelocyte	2,2 %
			1	Granulopoiesis: Basophil metamyelocyte	2,2 %
		>>>	43	Granulopoiesis: Basophil segment	96 %
	Nuclear cells - morphology	>>>	40	Granulopoiesis: Normal finding	89 %
			3	Granulopoiesis: Hypergranularity/toxic granulation	6,7 %
			3	Granulopoiesis: Nucleocytoplasmatic asynchrony	6,7 %
Object no. 4	Nuclear cells - type of cells	>	31	Erythropoiesis: Polychromatophil erythroblast	69 %
		>>>	14	Erythropoiesis: Orthochromatic erythroblast	31 %
	Nuclear cells - morphology		2	Granulopoiesis: Nucleocytoplasmatic asynchrony	4,4 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %
			4	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	8,9 %
			14	Erythropoiesis: Nucleocytoplasmatic asynchrony	31 %
		>>>	33	Erythropoiesis: Megaloerythroblast	73 %
			9	Erythropoiesis: Macroerythroblast	20 %
Object no. 5	Nuclear cells - type of cells		8	Granulopoiesis: Neutrophil segment	18 %
		>>>	37	Granulopoiesis: Eosinophil segment	82 %
	Nuclear cells - morphology		3	Granulopoiesis: Normal finding	6,7 %
			2	Granulopoiesis: Hypo-/agranularity	4,4 %
			1	Granulopoiesis: Neutrophil disgranularity	2,2 %
		>	31	Granulopoiesis: Cytoplasmatic vacuolisation	69 %
			2	Granulopoiesis: Nucleocytoplasmatic asynchrony	4,4 %
			3	Granulopoiesis: Neutrophil hypersegmentation	6,7 %
		>>>	27	Granulopoiesis: Eosinophil hypersegmentation	60 %
			1	Granulopoiesis: Nucleus fragments of neutrophiles	2,2 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %

Photo 2

Object no. 1	Nuclear cells - type of cells	>>>	45	Other cells: Bare nuclei / smudge cell	100 %
Object no. 2	Nuclear cells - type of cells	>>>	45	Lymphocyte pop.: Lymphocyte	100 %
	Nuclear cells - morphology	>>>	44	Lymphocyte pop.: Normal lymphocyte/plasmocyte	98 %
			1	Lymphocyte pop.: Patological lymphocyte	2,2 %
Object no. 3	Nuclear cells - type of cells		1	Erythropoiesis: Basophilc erythroblast	2,2 %
		>>>	44	Erythropoiesis: Polychromatophil erythroblast	98 %
	Nuclear cells - morphology		1	Granulopoiesis: Nucleocytoplasmatic asynchrony	2,2 %
			2	Erythropoiesis: Abnormal chromatin clumping	4,4 %
			9	Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation	20 %
			1	Erythropoiesis: Cytoplasmatic vacuolisation	2,2 %
			20	Erythropoiesis: Nucleocytoplasmatic asynchrony	44 %
		>>>	37	Erythropoiesis: Megaloerythroblast	82 %
			2	Erythropoiesis: Macroerythroblast	4,4 %
			6	Erythropoiesis: Gigantoerythroblast	13 %
Object no. 4	Nuclear cells - type of cells		1	Granulopoiesis: Neutrophil bar	2,2 %
			1	Granulopoiesis: Eosinophil myelocyte	2,2 %
			1	Granulopoiesis: Eosinophil metamyelocyte	2,2 %
		>>>	38	Granulopoiesis: Eosinophil stab	84 %
			4	Granulopoiesis: Eosinophil segment	8,9 %
	Nuclear cells - morphology	>	22	Granulopoiesis: Normal finding	49 %
			2	Granulopoiesis: Hypergranularity/toxic granulation	4,4 %
			1	Granulopoiesis: Neutrophil disgranularity	2,2 %
			8	Granulopoiesis: Cytoplasmatic vacuolisation	18 %
			5	Granulopoiesis: Nucleocytoplasmatic asynchrony	11 %
		>>>	15	Granulopoiesis: Megalostabs and megalometamyelocytes	33 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %
			1	Granulopoiesis: Döhle bodies	2,2 %

Patient B

Photo 2

Object no. 5	Nuclear cells - type of cells		2	Granulopoiesis: Neutrophil metamyelocyte	4,4 %
		>>>	43	Granulopoiesis: Neutrophil bar	96 %
	Nuclear cells - morphology		2	Granulopoiesis: Hypo-/agranularity	4,4 %
			1	Granulopoiesis: Hypergranularity/toxic granulation	2,2 %
		>>>	43	Granulopoiesis: Cytoplasmatic vacuolisation	96 %
			4	Granulopoiesis: Nucleocytoplasmatic asynchrony	8,9 %
		>>>	43	Granulopoiesis: Megalostabs and megalometamyelocytes	96 %
			1	Granulopoiesis: Abnormal chromatin clumping	2,2 %

General view and diagnosis

Cellularity		13	Normocellular	29 %
	>>>	32	Hypercellular	71 %
Granulopoiesis - count		14	Within physiological limits	31 %
		1	Increased	2,2 %
	>>>	30	Decreased	67 %
Granulopoiesis - morphology		1	No significant changes	2,2 %
		1	Dyspalstic granulopoiesis	2,2 %
	>>>	43	Megaloblastic granulopoiesis	96 %
Erythropoiesis - count	>>>	45	Increased	100 %
Erythropoiesis - morphology		1	Dysplastic erythropoiesis	2,2 %
	>>>	42	Megaloblastic erythropoiesis	93 %
		2	Macroerythroblastic erythropoiesis	4,4 %
Lymphopoiesis - count	>>>	35	Within physiological limits	78 %
	>	10	Decreased	22 %
Lymphopoiesis - morphology	>>>	45	No significant changes	100 %
Monocytopoiesis - count	>>>	45	Within physiological limits	100 %
Monocytopoiesis - morphology	>>>	45	No significant changes / reactive changes	100 %
Estimation of diagnosis	>>>	44	Megaloblastic anaemia	98 %
		1	Myelodysplastic syndrome (unclassifiable)	2,2 %

Evaluation of the results - scoring system NKDF2/20

Patient A	Photo A1	Photo A2	General view
Maximal achievable score:	**56**	**64**	**26**
Successful participants (success 60 % and more):	28 (it is 62 %)	43 (it is 96 %)	24 (it is 53 %)
Minimal success in this round:	-10,7 %	50,0 %	23,1 %
Maximal success in this round:	92,9 %	100,0 %	100,0 %

Patient B	Photo B1	Photo B2	General view
Maximal achievable score:	**56**	**60**	**22**
Successful participants (success 60 % and more):	38 (it is 84 %)	42 (it is 93 %)	44 (it is 98 %)
Minimal success in this round:	-14,3 %	16,7 %	45,5 %
Maximal success in this round:	100,0 %	100,0 %	100,0 %

Number of participants: 45

Number of the participants that succeeded:

in all 6 tests:	13 (it is 29 %)
in 5 tests:	20 (it is 44 %)
in 4 tests:	9 (it is 20 %)
in 3 tests:	1 (it is 2 %)
in 2 tests:	0 (it is 0 %)
in 1 test:	2 (it is 4 %)
in no test:	0 (it is 0 %)