

DIFFERENTIAL DIAGNOSIS OF SECONDARY HEMOPHAGOCYTC SYNDROME AND SEPSIS

Introduction:

Although sepsis and secondary hemophagocytic syndrome (SHPS) have similar clinical and laboratory presentation, they require a very different clinical strategy.

Aim.

This study was aimed at exploring laboratory profiles of sepsis and SHPS patients in order to find potentially useful markers for their differentiation.

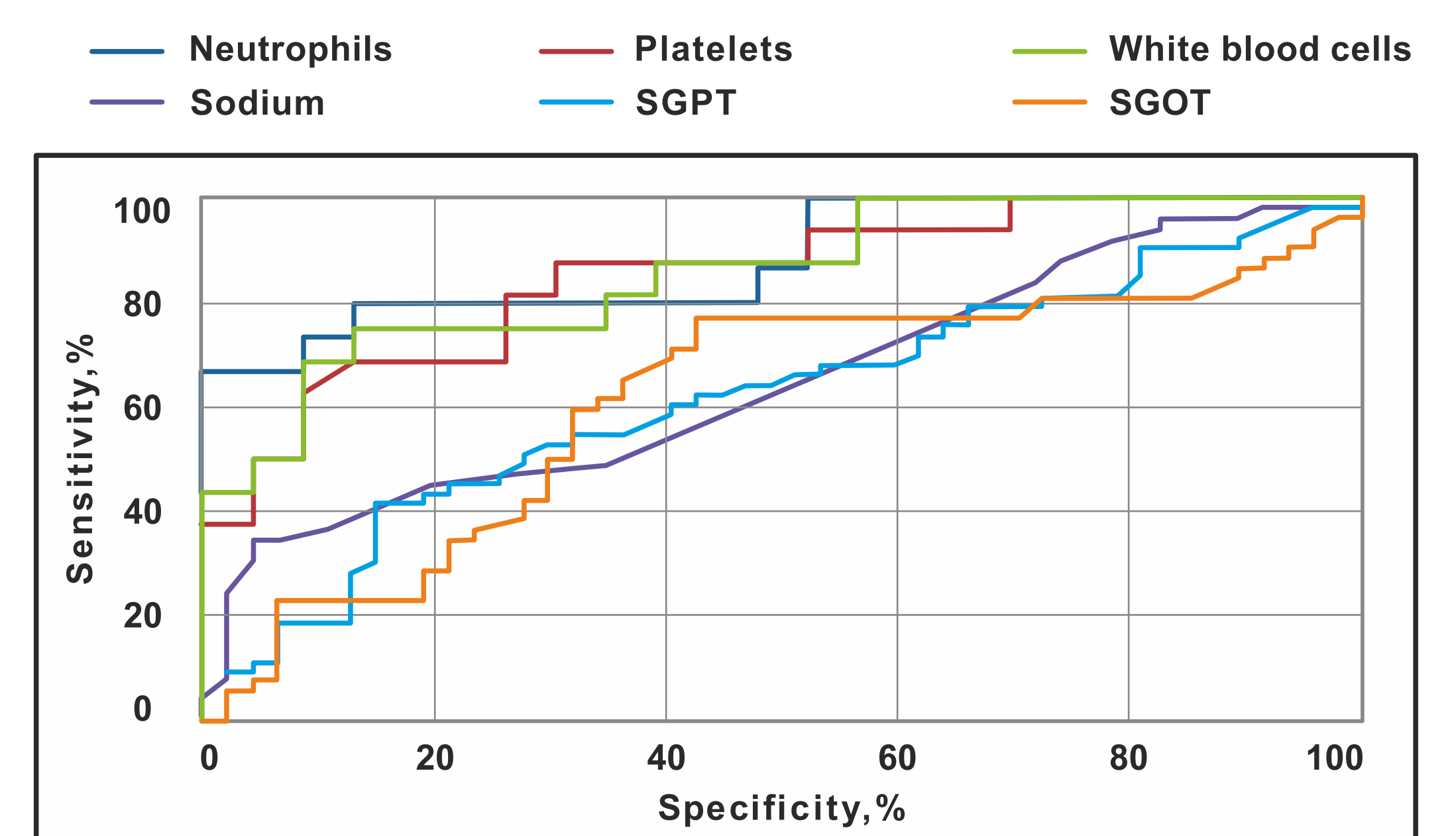
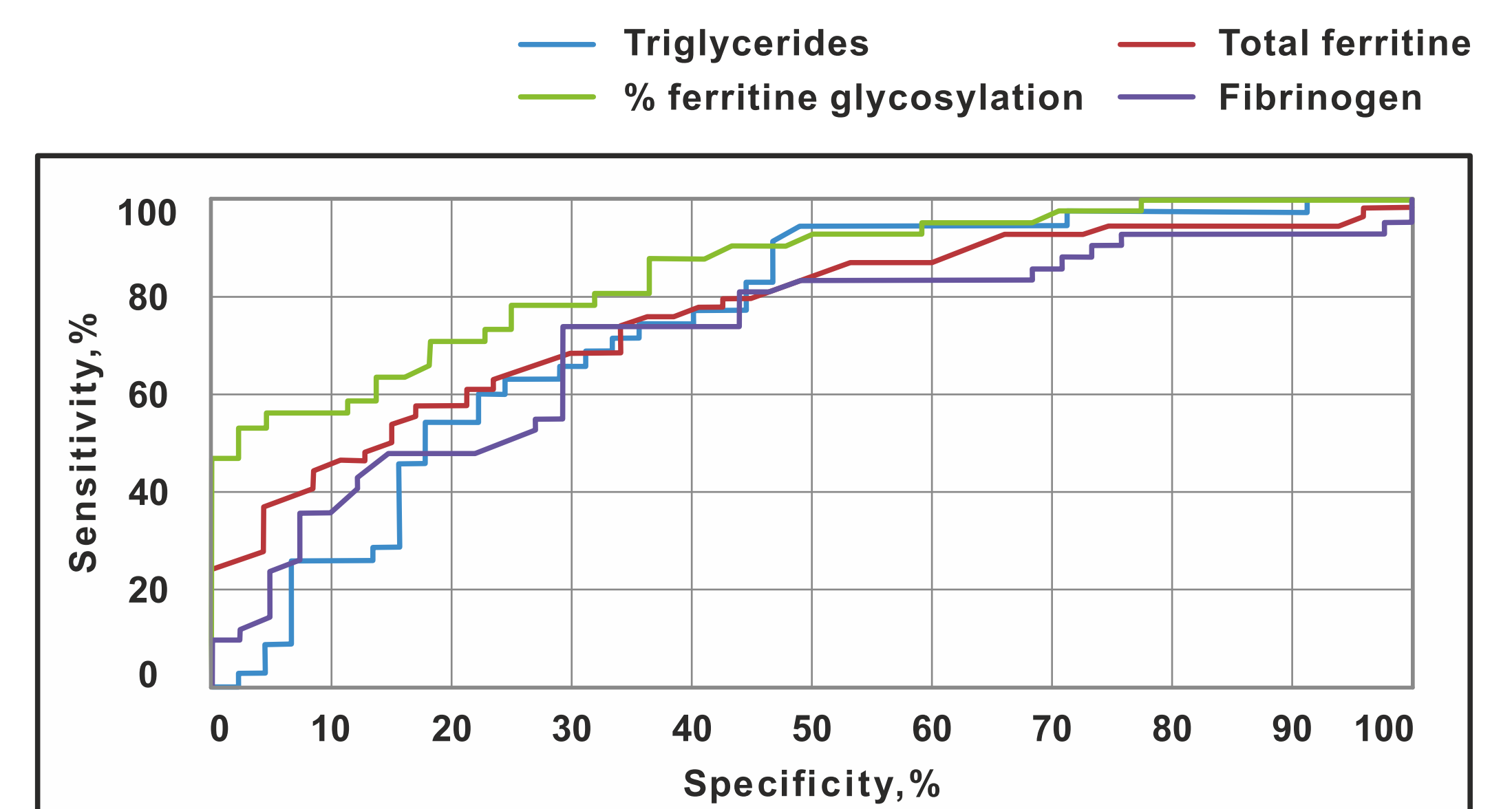
Materials and methods.

The data from 102 patients was analyzed: 55 pts were diagnosed SHPS (median age 60, range 2-76 years) and 47 sepsis (median age 62, range 18-80 years). The SHPS was diagnosed based on HLH-1994 criteria with main clinical manifestations being unexplained fever, cytopenia, lung or CNS impairment. Median HLH-1994 score is 5(SD=1). Median H-SCORE is 203 (Q1-156, Q3-222) points. The sepsis group included patients with severe inflammation, confirmed infection site and organ failure. Median SOFA score was 10 (Q1-3.75, Q3 -16.5) points.

Results.

Indicator	Dimension	SHPS(Q1-Q3)	Sepsis (Q1-Q3)	P	N
Ferritine	Ng/l	7170.0(3159.2-12 551.0)	1274.0 (559.0-3041.5)	<0.0001	101
Glycosylated ferritine	%	26.5 (16.7-37.3)	54.5 (37.7-71.8)	<0.0001	85
Fibrinogen	Gr/l	2.8 (1.5-4.4)	5.3 (2.8-6.8)	0.0028	83
Albumin	Gr/l	29.1 (26.1-32.0)	21.6 (18.7-25.6)	<0.0001	70
Sodium	Mmol/l	139.0 (133.0-142.0)	140.0 (137.2-144.8)	0.0483	95
Triglycerides	Mcmol/l	3.1(2.3-3.8)	1.5 (0.8-2.7)	0.0010	80
C-reactive protein	Mg/l	82.6 (28.2-162.5)	227.0 (132.2-282.5)	<0.0001	86
White blood cells	x10 ⁹ /l	3.7 (2.1-5.5)	8.9 (6.5-14.5)	0.0013	39
Platelets	x10 ⁹ /l	56.0 (25.2-93.5)	157.0 (97.0-308.0)	0.0017	39
Neutrophils	x10 ⁹ /l	2.0 (1.5-3.4)	6.7 (5.2-11.4)	0.0006	38
INR		1.3 (1.0-1.9)	1.5 (1.2-1.9)		91
sCD 163	Ng/ml	14.8 (12.9-21.3)	16.5 (6.8-27.7)		26
sCD 25	Ng/ml	147.6 (8.5-273.9)	21.6 (14.9-139.1)		32
IL-6	Pg/ml	78.5 (13.6-238.5)	292.7 (32.1-571.1)		30
IL-10	Pg/ml	66.9 (17.7-134.6)	3.8 (0.9-44.9)		30
IL-8	Pg/ml	166.0 (116.0-236.0)	144.0 (109.0-1216.0)		29
IFN-gamma	Pg/ml	64.7 (2.5-147.6)	1.8 (1.5-36.7)		30
SGPT	IU/l	50.0 (20.0-102.0)	30.0 (15.3-55.5)		100
SGOT	IU/l	66.0 (40.0-105.8)	36.0 (24.6-78.0)	NS	99
Alkaline phosphatase	IU/l	181.0 (115.0-318.2)	182.0 (84.4-1312.4)		40
Bilirubin	Mcmol/l	22.8 (12.8-50.2)	19.7 (7.1-41.3)		98
Creatinine	Mcmol/l	86.0 (71.2-126.0)	143.0 (78.2-256.5)		94
LDH	IU/l	1142.0 (586.5-1834.0)	1432.0 (554.9-2609.0)		44
Hemoglobin	Gr/l	86.5 (68.5-94.2)	89.0 (70.5-111.0)		39

ROC-analysis of the validity of different biomarkers in diagnosing SHPS



INS - non significant, IL - interleukin, sCD - soluble cluster of differentiation, IFN - interferon, SGOT- serum glutamic oxaloacetic transaminase, SGPT- serum glutamic pyruvic transaminase, LDH - lactate dehydrogenase

Validity of the biomarkers in different thresholds in diagnosing SHPS

Conclusion.

Validity of white blood cells, platelets and neutrophils in differentiating of sepsis and SHPS is promising but further investigation with more data is necessary. Levels of serum triglycerides, ferritin and glycosylated ferritin percentage are most likely markers for differential diagnosis between sepsis and SHPS.

Key words:

sepsis, hemophagocytic syndrome, ferritin, glycosylated ferritin, triglycerides.

Conflicts of interest: none

Factor	Dimension	Threshold	Sensitivity%	Specificity %	AUC	P
Neutrophils	x10 ⁹ /l	<2	40.00	100.00	0.88	0.025
Total ferritine	Ng/l	≥6640	57.41	95.74	0.85	<0.0001
Glycosylated ferritine	%	<38.4	78.05	72.73	0.85	<0.0001
White blood cells	x10 ⁹ /l	<4	56.25	91.30	0.85	0.0012
Platelets	x10 ⁹ /l	<100	75.00	73.91	0.84	0.0026
Sodium	Mmol/l	<136	36.73	89.13	0.65	0.0033
SGOT	IU/l	>41	63.83	59.27	0.61	0.0633
SGPT	IU/l	>37	55.32	66.12	0.61	0.0010
Fibrinogen	gr/l	<2	30.95	92.68	0.71	0.0142
Triglycerides	Mcmol/l	<1.5	23.81	95.12	0.74	0.001
		≥1.84	82.86	55.56		
		≥3	36.73	89.13		

SGOT - serum glutamic oxaloacetic transaminase, SGPT - serum glutamic pyruvic transaminase

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