

Report: Qualitative Evaluation of Blood Picture and Bioimpedance Analysis pre- and post Q2 Sessions.

October 2003

Qualitative Blood Evaluation

A fresh film of blood was examined under a dark field/phase contrast microscope at 100x, 400x and 1000x magnification. The film of blood is examined for any irregularities in shape, size, membrane integrity and patterns of stickiness of the cells. We work with the premise that there is a direct correlation between the overall health of the body and the health of the blood cells. There appears to be a direct correlation between disturbance in the blood cells and appearance of pathology. The following parameters were assessed pre and post Q2 applications.

Rouleau is the formation of chains of red blood cells. There is a correlation between degree of rouleau and amount of inflammation in the body. It is measured as (S) simple – single chains; (B) branched – branched configuration and (I) interlaced – matted tangled cells (increasing severity). Red blood cells carry a negative charge on the membrane which causes the cells to repel each other, ensuring that they flow separate from each other. Various immune reactions and toxins reduce the negative charge causing the cells to attract each other thus forming rouleau.

Aggregation is a severe form of rouleau. Hemolysis (bursting) of cells and folding of cells may be observed amongst the aggregated cells.

Stickiness General stickiness of red blood cells observed as groups of stagnant cells with rivers of flowing cells moving between them. Form as a result of the accumulation of certain by-products in the blood.

Shape variation Ideally the red blood cells should be perfectly round and of equal size. Various irregularities occur in shape which are the result of many different dysfunctions in the body.

Target cells due to changes in the membrane content, the red blood cell becomes cup shaped. Usually associated with liver and bile dysfunction.

Degeneration with time Cells exposed to oxygen out of the body will degenerate and die. Observation of the time taken to degenerate and degree of degeneration gives an indication of the integrity of the cells, free radical load and antioxidant reserves.

Foreign particles Certain foreign particles are observed in the blood associated with disturbance in the microbiological environment of the body.

White Blood Cell Integrity a progressive degeneration in white blood cells may be observed which is an indicator of ability for these immune cells to function effectively.

Bioimpedance analysis

By measuring the ability of the body to conduct a low electrical current, one is able to calculate the composition of the body, the electrical charge of the cell membranes and the distribution of water inside and outside of the cells. Many functions in the body are facilitated across the cell membrane and the ability for the function to be performed is dependent to a certain extent on the electrical charge on the

membrane. Measured as the phase angle, the electrical charge of the membrane determines the ability for the body to heal itself, detoxify itself and perform regulating processes. A numerical increase in measure indicates an improvement in function.

All cells in the body contain water (intracellular water) and are surrounded by water (extracellular water). Toxicity, nutrient status and electrical charge of the membrane determine the ratio of water inside and outside of the cells. The optimal ratio of intra/extracellular water is 60%/40%.

Subject 1: RS

Red Blood Cell Rouleau		Before Q2 SBI 4	After Q2 SBI3
Aggregation	Unaffected Hemolysed Folded	1 - -	1 - -
Stickiness		2	2
Shape Variation	Eliptocytes (oval) Echinoctyes (prickly) Acanthocytes Keratocytes (fragments) Schizocytes (helmet)	2	1
Target cells		2 strong	2 strong
Degeneration with time		2	2
Foreign Particles	L forms Clusters Bright cells RBC parasites Scleroplasts	1 1 1 1 -	1 - - 1 -
White Blood Cells Integrity of cells	Granulocytes Lymphocytes	1 1	1 1

Key:

Rouleau

S – Simple B – Branched I – Interlaced

1 - Occasional 2 – Mild 3 – Moderate 4 – Severe 5 – Very severe

Shape Variation, Target cells and Foreign Particles

Occassional 2 – 1-2/ field 3 – 3-4 per field 4 – 5-6 per field 5 - >7 per field

White Blood Cells

1 – Good 2 – Ballooning 3 – tails 4 – Multiple streaming 5 – membrane break/granule spillage

1 – Good 2 – Membrane hairyness 3 – irregular nucleus 4 – vacuoles/inclusions 5 – cell breakdown

Subject 2: AG

Red Blood Cell Rouleau		Before Q2 SB 3	After Q2 SB 2
Aggregation	Hemolysis Folding	3 2	2 -
Stickiness		3	2
Shape Variation	Eliptocytes (oval) Echinoctyes (prickly) Acanthocytes Keratocytes (fragments) Schizocytes (helmet) Circular	2 1 4	2 3
Target cells		1	1
Degeneration with time			
Foreign Particles	L forms Clusters Bright cells RBC parasites Scleroplasts	1 1 2	1
White Blood Cells Integrity of cells	Granulocytes Lymphocytes	3 1	2 1

Key:

Rouleau

S – Simple B – Branched I – Interlaced

1 - Occasional 2 – Mild 3 – Moderate 4 – Severe 5 – Very severe

Shape Variation, Target cells and Foreign Particles

Occassional 2 – 1-2/ field 3 – 3-4 per field 4 – 5-6 per field 5 - >7 per field

White Blood Cells

1 – Good 2 – Ballooning 3 – tails 4 – Multiple streaming 5 – membrane break/granule spillage

1 – Good 2 – Membrane hairyness 3 – irregular nucleus 4 – vacuoles/inclusions 5 – cell breakdown

Subject 3: JC

Red Blood Cell Rouleau		Before Q2 SB 3	After Q2 SB 2
Aggregation	Hemolysis Folding	2 2	
Stickiness		-	-
Shape Variation	Eliptocytes (oval) Echinocytes (prickly) Acanthocytes Keratocytes (fragments) Schizocytes (helmet)	- 2 - - -	- - 1 - -
Target cells		3	3
Degeneration with time		Prickly balls, undulated membrane, circular protrusions, hemolysis, membrane spike	Prickly balls, membrane spikes
Foreign Particles	L forms Clusters Bright cells RBC parasites Scleroplasts	- - - - -	1 - - 1 -
White Blood Cells Integrity of cells	Granulocytes Lymphocytes	5 5	2 2

Bioimpedance analysis	Before Q2	After Q2
Phase angle	6.1	6.4
Ratio of Intracellular/extracellular water	51.6% / 48.4%	53.0% / 47.0%

Key:

Rouleau

S – Simple B – Branched I – Interlaced

1 - Occasional 2 – Mild 3 – Moderate 4 – Severe 5 – Very severe

Shape Variation, Target cells and Foreign Particles

Occassional 2 – 1-2/ field 3 – 3-4 per field 4 – 5-6 per field 5 - >7 per field

White Blood Cells

1 – Good 2 – Ballooning 3 – tails 4 – Multiple streaming 5 – membrane break/granule spillage

1 – Good 2 – Membrane hairyness 3 – irregular nucleus 4 – vacuoles/inclusions 5 – cell breakdown

Subject 4: JB

Red Blood Cell Rouleau		Before Q2 SB 3	After Q2 SB 1
Aggregation	Hemolysis Folding	- -	- -
Stickiness		2	-
Shape Variation	Eliptocytes (oval) Echinoctyes (prickly) Acanthocytes Keratocytes (fragments) Schizocytes (helmet)	- 2 - - -	- - 1 - -
Target cells		2	2*
Degeneration with time		Prickly balls, circular protrusions	Mild prickly ball
Foreign Particles	L forms Clusters Bright cells RBC parasites Scleroplasts	- - 2 1 -	- - - - -
White Blood Cells Integrity of cells	Granulocytes Lymphocytes	2 2	1 2

* Frequency of target cells constant, depth of cup-shaped deformation reduced.

Key:

Rouleau

S – Simple B – Branched I – Interlaced

1 - Occasional 2 – Mild 3 – Moderate 4 – Severe 5 – Very severe

Shape Variation, Target cells and Foreign Particles

Occasional 2 – 1-2/ field 3 – 3-4 per field 4 – 5-6 per field 5 - >7 per field

White Blood Cells

1 – Good 2 – Ballooning 3 – tails 4 – Multiple streaming 5 – membrane break/granule spillage

1 – Good 2 – Membrane hairyness 3 – irregular nucleus 4 – vacuoles/inclusions 5 – cell breakdown

Subject 5: DvdB

Red Blood Cell Rouleau		Before Q2 SB 4/3	After Q2 SB 2
Aggregation	Hemolysis Folding	2 2	1 2
Stickiness		-	-
Shape Variation	Eliptocytes (oval) Echinoctyes (prickly) Acanthocytes Keratocytes (fragments) Schizocytes (helmet)	- 2 - - -	- 1 1 1 1
Target cells		3/4	3
Degeneration with time		Circular protrusions, disintegration, prickly balls, strong target cell deform	Disintegration, prickly balls, strong target cell deform, dark circular rbc fragments
Foreign Particles	L forms Clusters Bright cells RBC parasites Scleroplasts	- - - - -	- - - - -
White Blood Cells Integrity of cells	Granulocytes Lymphocytes	5 (20%)	1

Bioimpedance analysis	Before Q2	After Q2
Phase angle	8.1	7.9
Ratio of Intracellular/extracellular water	62.6% / 37.4%	61.3% / 38.7%

Key:

Rouleau

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Shape Variation, Target cells and Foreign Particles

Occasional 2 – 1-2/ field 3 – 3-4 per field 4 – 5-6 per field 5 - >7 per field

White Blood Cells

1 – Good 2 – Ballooning 3 – tails 4 – Multiple streaming 5 – membrane break/granule spillage
1 – Good 2 – Membrane hairyness 3 – irregular nucleus 4 – vacuoles/inclusions 5 – cell breakdown

Subject 6: JT

Red Blood Cell Rouleau		Before Q2 SB 2	After Q2 SB 2
Aggregation	Hemolysis Folding	2 2	- -
Stickiness		1	-
Shape Variation	Eliptocytes (oval) Echinoctyes (prickly) Acanthocytes Keratocytes (fragments) Schizocytes (helmet)	3 - 1 - -	
Target cells		2	2*
Degeneration with time		-	Prickly balls
Foreign Particles	L forms Clusters Bright cells RBC parasites Scleroplasts	1 - - - -	- - - - -
White Blood Cells Integrity of cells	Granulocytes Lymphocytes	1 3	1 2

Bioimpedance analysis	Before Q2	After Q2
Phase angle	5.3	5.7
Ratio of Intracellular/extracellular water	49.5% / 50.5%	50.7% / 49.3 %

Key:

Rouleau

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Shape Variation, Target cells and Foreign Particles

Occasional 2 – 1-2/ field 3 – 3-4 per field 4 – 5-6 per field 5 - >7 per field

White Blood Cells

1 – Good 2 – Ballooning 3 – tails 4 – Multiple streaming 5 – membrane break/granule spillage

1 – Good 2 – Membrane hairyness 3 – irregular nucleus 4 – vacuoles/inclusions 5 – cell breakdown

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