A PRELIMINARY INVESTIGATION OF THE RELATIONSHIP BETWEEN LIVE BLOOD ASSESSMENT USING DARKFIELD MICROSCOPY (HEMAVIEW™) AND PATHOLOGY MARKERS OF INFLAMMATION AND METABOLIC SYNDROME

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BACKGROUND INFORMATION

Hemaview™ live blood assessment using dark field microscopy (LBA-DM) is a point-of-care screening tool used predominantly by complementary health care practitioners. Using LBA-DM blood cells can be viewed immediately, untreated, in their fresh state, allowing the practitioner to make an assessment of the patient's blood cell morphology and dynamics [1].

Obesity and metabolic dysfunction are major health issues for Australian society today. It is well understood that individuals with high waist measurement, high waist to hip ratio and high body mass index (BMI) are at increased risk of insulin resistance, metabolic dysfunction, diabetes and inflammatory conditions.

The aim of this study was to determine whether the outcomes of Hemaview™ LBA-DM screening were in line with that of a standard pathology blood test for monitoring inflammation and metabolic health in individuals [2].

METHOD

Seventy participants with the age range of 24 to 68 years and BMI range of 16.8 to 55 were recruited. The participants' blood samples were assessed using fasting Hemaview™ LBA-DM (finger prick capillary blood) and fasting pathology (venous blood) tests. Hemaview™ LBA-DM parameters measured included fibrin number and area, platelet number and area, and chylomicron counts. Pathology tests included LDL, HDL, triglycerides, platelets, fibrin, C-reactive protein, erythrocyte sedimentation rate, liver function tests, HbA1c, fasting glucose and insulin. The participants were then given a standardised high-fat meal and re-assessed using Hemaview™ LBA-DM two hours postprandially.

RESEARCH FINDINGS

1. A positive Spearman's rho correlation was found between BMI and LBA-DM fasting fibrin area (r_s (40) = 0.44, p = 0.005) and LBA-DM postprandial fibrin area (r_s (40) = 0.48, p = 0.002, two-tailed). A positive and moderate correlation was also observed between LBA-DM postprandial fibrin number and C-reactive protein (r_s (38) = 0.51, p = 0.001, two-tailed).
2. A positive Pearson's correlation between the fasting and postprandial LBA-DM platelet areas with pathology platelet counts was found (r (40) = 0.43, p = 0.006, two-tailed; r (40) = 0.44, p = 0.004).
3. Fasting chylomicron number in Hemaview™ LBA-DM correlated with fasting triglyceride levels in pathology tests (r_s (40) = 0.35, p = 0.029, two-tailed). The metabolic defects (for example, insulin resistance) that lead to poor chylomicron clearance after meals and subsequent elevated fasting chylomicrons might be related to elevated circulating triglyceride levels [3].

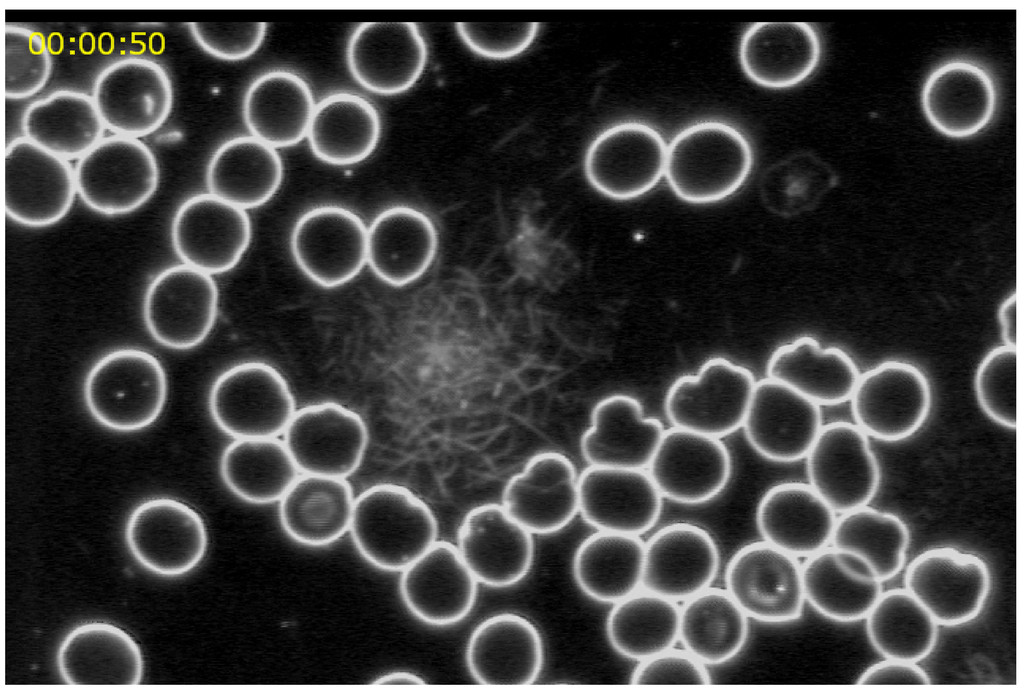

Figure 1: Fibrin as seen in Hemaview™ LBA-DM.

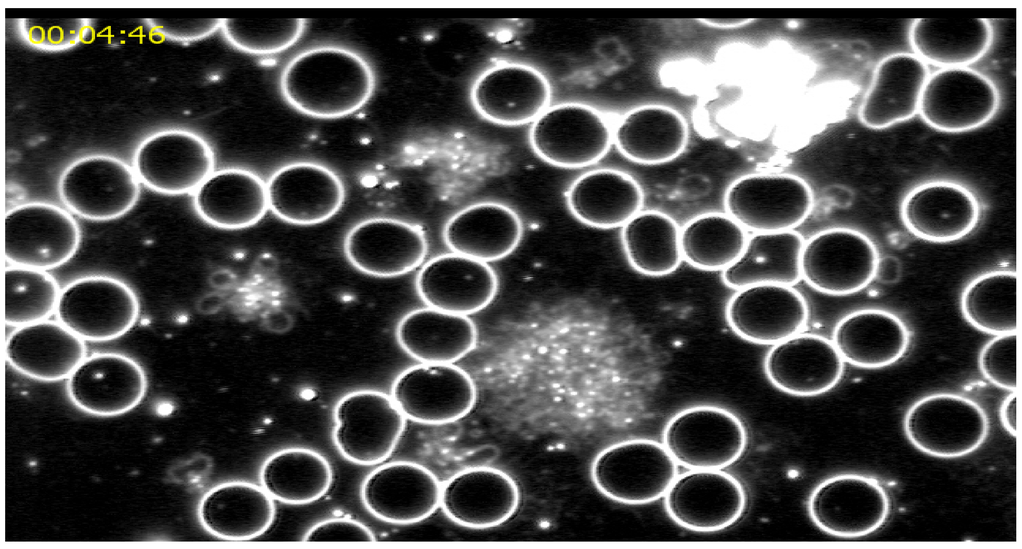

Figure 2: Platelet aggregates as seen in Hemaview™ LBA-DM.

CONCLUSIONS

The results of this preliminary study indicated that significant correlations existed between:

- Postprandial fibrin in Hemaview™ LBA-DM with C-reactive protein;
- Fasting and postprandial Hemaview™ LBA-DM platelet counts with pathology platelet counts; and
- Fasting Hemaview™ LBA-DM chylomicron counts with pathology triglyceride levels.

This suggests that Hemaview™ LBA-DM might be considered as a potential supplementary point-of-care screening tool for assessing levels of inflammation and impaired lipid metabolism.

REFERENCES

[1] Vitetta L, et al. The live blood analysis technique. Australian Integrative Medicine Association Journal, 2005; 24: 16-20.

[2] Reeve, K. An investigation into the validity of darkfield microscopic analysis of live capillary blood as a screening tool for inflammation and metabolic disease. Preliminary Report produced as part of Masters of Science – Southern Cross University, Lismore (NSW), 2013.

[3] Rapp RJ. Hypertriglyceridemia: A review beyond low density lipoprotein. Cardiology in Review, 2002; 10(3):163-172.

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