



Blood Volume Analysis (BVA) Clinical Case Study

Vasoconstrictive Hypertension

History:

This forty-nine year old, 70" height, 208lbs. East-Asian (Trinidad-Tobago) male has a two-year history of hypertension and hyperlipidemia. He has been on several anti-hypertension medications and Pravachol for hyperlipidemia. His blood pressure today was 144/108. Patient referred for a blood volume analysis to evaluate volume expansion and vasoconstriction factors as contributory to his hypertension.

BVA Results:

Blood Vol.	4136cc	Ideal Blood Vol.	5385cc	Deficit	1250cc	Devtn.	-23.2%
Red Cell Vol.	1640cc	Ideal Red Cell Vol.	2184cc	Deficit	544cc	Devtn.	-24.9%
Plasma Vol.	2496cc	Ideal Plasma Vol.	3203cc	Deficit	706cc	Devtn.	-22.0%

Normal
0 to 8%

Mild
8 to 16%

Moderate
16 to 24%

Severe
24 to 32%

Extreme
>32%

Hematocrit: 42%

Clinical Findings:

This patient has moderate to severe hypovolemia and red cell volume deficit with a normal hematocrit. This patient has vasoconstrictive hypertension with significant hypovolemia. This patient should be treated only with vasodilators. Diuretics should not be used as they will further decrease blood volume and may precipitate pre-renal azotemia. In addition, it is suggested the patient be evaluated for a possible renal cause of his hypertension, such as renal artery stenosis, which may activate the renin-angiotensin system. ACE inhibitors are suggested as possible initial therapy.

Technical Analysis:

Technical analysis consists of an evaluation of five separate blood volume collection points with mathematical evaluation of consistency. Technical evaluation is reported as acceptable or unacceptable.

All five individual sampling points, tested in duplicate, were internally consistent with no significant deviations. The standard deviation was less than 2%. The slope was 0.00224 and is normal. Therefore, the results are technically acceptable.