Dynamic Chiropractic

HEALTH & WELLNESS / LIFESTYLE

Hair Analysis: a Rebuttal and Clarification

William Risley, DC

An article by Dr. G. Douglas Andersen[1] specifically assessed hair analysis and based much of his commentary on a *Journal of the American Medical Association (JAMA)* article on the same subject (January 3, 2001). Dr. Andersen writes well with this article and others that I have read in his column. Unfortunately, his comments are based upon a seriously flawed study that should be discarded and never reincarnated. It reminds me of an episode in chiropractic history, wherein some "scientists" placed several thousand pounds of pressure on a specific vertebra of a cadaver, attempting to move the segment. No movement occurred, and additional increments of pressure broke or crushed the subject vertebra.

They concluded that it is impossible to move a spinal segment; furthermore, that chiropractic claims of doing so were invalid and impossible. B.J. Palmer in his inimitable style, ran his own "experiment." He placed a common nail upright on a board, and applied thousands of pounds of pressure to the nail. Try as he might, the nail would bend or break and not go into the board. His conclusion? It is impossible for someone with a one-pound hammer to drive a nail into a board. So much for science.

Unfortunately, from that day on multiple negative articles were spawned that alleged proof by previous science, that chiropractic adjustments couldn't work and certainly couldn't move a spinal vertebra.

The *JAMA* article has had the same effect. The study, as described, is effectively worthless for a very simple reason: Pfeiffer,[2] Passwater and Cranton,[3] Ferriman,[4] et al., state that at any given time, between 10 and 33 percent of the hair shafts are "resting," or have no mineral exchange or accumulation at all. At various other times, the hair shaft is undergoing catabolism, being rebuilt or is simply effectively dormant. Consider also have that many patients exhibit partially gray hair; hair shafts that are literally salt-and-pepper in color; or may have "shocks" of all gray or white in the middle of an otherwise black or brown head of hair.

An average mineral content per each patient is what the laboratory strives to achieve. Tested results are consistently within acceptable levels of standard deviation. The science of assaying the sample is virtually bulletproof; the protocol of sampling the specimen and possible external contaminants allows room for error. Our experience takes possible errors into account.

Leroy[5] has shown that washing the hair at the laboratory alters the levels of the more water-soluble elements, which also would account for discrepancies between labs. Repeat sampling of the same patient with the laboratory using the same protocol-washed (or not) maintains accuracy for that particular patient.

Realizing the differences in hair growth rate and physiological activity of mineral storage and exchange, dividing the patient's hair for six different labs could easily yield one sample with no mineral activity versus two samples with greater mineral exchange and activity, and differences in each test would be guaranteed.

A letter to the editor of *JAMA*, by Steven Steindel,PhD, and Peter Howanita,MD, was submitted subsequently in rebuttal of its article. They addressed the problem of the submitted sample not being homogeneous. They stated: "The authors most likely chose not to distribute the samples as powder, which differs greatly from the usually submitted specimens." (emphasis mine) They further stated: "It is easy to envision the scenario in which pockets of trace metals collect in areas that are different from hair to hair and within the shaft, and thus, results in a heterogeneous sample, again perhaps explaining the difference observed among the laboratories."

Most revealing is the comment by these contributors; "Hence, reasonable explanations exist for the observed extreme disparity in interlaboratory results that are independent of the laboratory methods." (emphasis mine)

Drs. Steindel and Howanita suggest that most (hair testing laboratories) in the field have deviations less than 10 percent, and usually less than five percent. These results are well within acceptable laboratory variables. According to these experts, some test results (blood) commonly vary between labs from 15 to 50 percent. A quick assessment of multiple test results according to leading texts on lab diagnosis is shown on page 42. There are clear and significant differences in the so-called normals between from lab to lab.

Comparisons of Target Results of Laboratory Tests by Three Laboratory Texts

1. Serum amylase, an enzyme[7]

Amylase, Serum 25 - 125 U/L	"Normal values vary widely, according to method of testing."[7]
Amylase, Serum 25 - 160 U/L	"More than 20 methods of measuring Serum Amylase exist with different ranges of normal values."[7]
Amylase, Serum 35 - 115 U/L	"Values may vary according to the laboratory performing the test."[8]

2. Acid phosphatase - a marker for prostate cancer

acid phosphatase 0 - 3.1 ng/ml[6]
acid phosphatase 2.5 - 3.7 ng/ml[7]
acid phosphatase 0.1 - 5.0 U/dl (King-Armstrong)
acid phosphatase 0.1 - 0.8 U/dl (Bessey-Lowrey)
acid phosphatase 0.5 - 2.0 U/dl (Bodansky)[8]

3. Carcinoembryonic antigen, a marker for colon cancer

carcinoembyonic antigen	up to 10 ng/ml in smokers[6]
carcinoembyonic antigen	less than 5 ng/ml (non-smokers) no value listed for smokers[7]
carcinoembyonic antigen	less than 2.5 ng/ml (non-smokers) less than 5.0 ng/ml (smokers)[8]

Assessments on laboratories that perform blood and urine analysis commonly demonstrate testing

errors greater than 20 percent in the printed test results. Based upon that statement and the opinions of the study's authors, blood and urine analysis should be discarded as being unreliable and unscientific.

The only scientific, accurate and honest method of comparison is virtually powdering the hair sample, then splitting the sample for different labs. At Analytical Research Labs (laboratory A in the study), we frequently participate with other labs in such studies. Our results are equal to or exceed the accuracy of blood and urine laboratories.

Dr. Andersen highlights the comment that the donor patient had no clinical evidence of any of the diagnostic comments given by each lab. Analytical Research Laboratories has identified the patient and doctor who submitted the patient's hair sample for this "study." The article states that the patient is a "40-year-old white, female," yet her case history form states that she is 43 years of age. Whom shall we believe? She is further identified as being in generally good health in one instance, and as a healthy adult in another. Her case history, signed by her physician, states that she is suffering from hypothyroidism (underactive thyroid), allergies and fatigue. Are we to believe that she is healthy as claimed, or really has some health problems, as her written notation declares, as attested to by the submitting physician?

The authors of this study present the hypothesis that "there should be no significant variations from test results on scalp hair from a single donor." That hypothesis is ill-founded, seriously incorrect, and dooms the study to the realm of being invalid.

Unfortunately, Dr. Andersen, and others to be sure, have relied upon this extremely poor assessment of the science. Now the erroneous conclusions are perpetrated forward in the minds of many people and many chiropractic doctors.

The participants failed to maintain strict scientific standards in their study, or have willingly (or unwillingly) been duped into publishing erroneous information, which does serious damage to many parties involved, not to mention the patient population. *JAMA* has assisted this seriously flawed study. Its reputation drops another several pointsbelow its already poor reputation as an unbiased, scientific publication. Criticism of the American Medical Association as a vested medical business is not blunted by continued publication of such poor science.

References

1. Andersen GD. Hair analysis. *Dynamic Chiropractic* October 8, 2001;9(21):pp38,39,41.
2. Pfeiffer C. *Mental and Elemental Minerals,* 1975.
3. *Trace Elements, Hair Analysis and Nutrition,* Passwater and Cranton 1983.
4. Ferriman D. *Human Hair Growth in Health and Disease.* (Oxf.) FRCP (London) 1971. Thomas, Springfield, Illinois.
5. LeRoy RF. Effect of washing on trace element content of human hair. *Journal of Orthomolecular Medicine* 1985;2(1).
6. Fischbach F. *A Manual of Laboratory and Diagnostic Tests* 6th ed, Lippincott, 2000.
7. *Handbook of Diagnostic Texts,* 2nd ed. Springhouse Corporation 1995.
8. Jaffe MS, McVan BF, Davis FA. *Davis's Laboratory and Diagnostic Test Handbook.* Phila. 1997.

William Risley,DC
Phoenix, Arizona