

EFFECT OF PHOTOCHEMOTHERAPY ON BLOOD CHEMISTRY OF PSORIATIC PATIENTS

G. H. HAJINI,* S. T. HUSSAIN † AND M. ISHAQ ‡

Summary

A detailed study of blood chemistry of psoriatic patients under photochemotherapy was undertaken. No significant changes were observed in any of the parameters studied.

"The Psoriasis and Photobiology task force" of the American Academy of Dermatology has expressed fear that an initial success of photochemotherapy for psoriasis might lead to its widespread use before completion of its safety evaluation¹. In vitro exposure of lymphocytes to methoxsalen and ultraviolet light has been shown to produce chromosomal abnormalities in such lymphocytes. Such abnormalities were also produced in lymphocytes isolated from blood of persons who had received methoxsalen 2 hrs earlier. No abnormalities were however observed in vivo experiments². Since photochemotherapy has now been accepted as a good form of therapy in psoriatic patients and each patient has to receive this therapy for a long time an attempt was made to study the effect of this therapy on blood chemistry.

Material and Methods

Psoriatic patients were put on photochemotherapy with fifty mg of methoxsalen and u. v. light exposure for 10

minutes as reported earlier³. Blood samples were collected before and immediately after exposure to u. v. light on day one of the therapy. In some cases repeat samples were taken on day seven and ten of therapy. The samples were analyzed for SGOT and SGPT by the method of Rietman and Frankel⁴, serum calcium by the method of Mager and Farese⁵ after deproteinization of serum by the method of Singer et al⁶, serum alkaline phosphatase by the method of Kind and King⁷, serum phosphorus by the method of Fiske and Subbarow⁸, serum cholesterol by the method of Henly⁹, and serum urea by the thiosemicarbazide method¹⁰. Serum creatinine was measured by the method of Bonsnes and Taussky and glomerular filtration rate estimated by creatinine clearance¹¹. Serum sodium and potassium were measured by flame photometry. Besides the above studies osmotic fragility of R. B. C. was also evaluated and total and differential counts were made together with a microscopic evaluation of peripheral blood smears.

Observations and Results

Results are tabulated in Table I. No abnormal changes were noticed in any of the parameters studied.

* Associate Professor & HOD
Dermatology & Venereology

† Lecturer, Biochemistry

‡ Demonstrator, Biochemistry
Medical College, Srinagar

Received for publication on 12-5-1978

TABLE 1

Effect of U. V. light on the blood chemistry of psoriatic patients on photochemotherapy

Parameter	Value before exposure to u.v. light	Value after exposure to u.v. light
1. Serum Creatinine mg%	0.71 ± 0.058 (10)	0.70 ± 0.043 (10)
2. Serum Urea mg%	21 ± 2.02 (10)	21 ± 1.36 (10)
3. Serum Cholesterol mg%	173 ± 10.7 (10)	171 ± 9.9 (10)
4. Serum Na ⁺ mmol/liter	143 ± 2.58 (12)	142 ± 3.2 (12)
5. Serum K ⁺ mmol/liter	5.2 ± 0.421 (12)	5.4 ± 0.386 (12)
6. Serum calcium mg%	9.5 ± 0.46 (11)	9.6 ± 0.40 (11)
7. Serum phosphorus mg%	3.5 ± 0.27 (11)	3.5 ± 0.25 (11)
8. S.G.O.T.*	31 ± 2.6 (8)	32 ± 2.0 (8)
9. S.G.P.T.*	26 ± 4 (9)	26 ± 4 (9)
10. Alkaline phosphatase**	11 ± 1.4 (15)	10 ± 0.96 (15)

All values refer to mean ± S.E. of the mean. Figures in parenthesis refer to number of observations.

* Expressed as Rietman & Frankel units

** Expressed as King Armstrong units

Discussion

Illumination with ordinary light is known to lower plasma bilirubin levels^{1,2}. Wurtman has pointed out that "the observation that environmental light from sun or from artificial sources modifies the plasma level of one endogenous compound opens a Pandora's box for the student of human biology and raises the possibility that the plasma levels of many additional compounds will be similarly affected¹³. The present study however has not shown any significant change in blood chemistry of psoriatic patients subjected to photochemotherapy. The results indicate the safe nature of this therapy. However further studies are needed for confirmation particularly where prolonged therapy is instituted.

Acknowledgement

Our thanks are due to Mr. Chaman Lal Dhar for typing the manuscript.

References

1. Editorial : PUVA statement, Arch Derm, 113 : 1195, 1977.
2. Swanbeck G, Thyresson Hok M, Bredberg A et al: Treatment of psoriasis with oral psoralens and long wave ultraviolet light. Therapeutic results and cytogenetic hazards, Acta Derm Venereol, 55 : 367, 1975.
3. Hajini GH, Hussain ST, Kaur M, et al : Photochemotherapy for psoriasis, Ind J. Derm Venereol and Leprol, 44 : 82, 1978.
4. Reitman S and Frankel S : Colorimetric method for the serum determination of transaminase activity, Am J Clin Pathol, 28 : 56, 1957.
5. Mager M and Farese G : Direct photometric analysis of serum calcium with glyoxal bis (2 hydroxyanil), Clin Chem, 12 : 234, 196 .
6. Singer L, Armstrong WD and Colman LM : Microdetermination of calcium in biological materials, Anal Biochem, 9:217, 1964.
7. Kind PRN and King EJ, (1954) Quoted in Varley H Practical Clinical Biochemistry Chap. XVIII Interscience Books Inc NY 1967.
8. Fiske GH and Subbarow Y : The colorimetric determination of phosphorus, J Biol Chem, 66 : 375, 1925.

EFFECT OF PHOTOCHEMOTHERAPY ON BLOOD CHEMISTRY OF PSORIATIC PATIENTS

9. Henley AA (1957) Quoted in Varley H Practical Clinical Biochemistry. Chap. XIV. Interscience Books Inc. NY, 1967.
10. Marsh WH, Fingerhut B and Miller H : Automated and manual direct methods for the determination of blood urea, Clin Chem, 11 : 624, 1965.
11. Bonsnes RW and Taussky HH (1945) Quoted in Varley H Practical Clinical Biochemistry Chap. XI Interscience Books Inc. NY, 1967.
12. Thorington L, Cunnigham L and Parascandola J : The illuminant in the prevention and phototherapy of hyperbilirubinemia, Illum Eng, 66 : 240, 1971.
13. Wurtman RJ : The effects of light on the human body, Scientific American, 233:69, 1975.