

Medical Service, who had had a long and exceptional experience, once told me that he believed that seventy-five per cent. of the native population of India suffered from syphilis, either inherited or acquired!

An analysis of all the data including age, sex, nationality, civil condition, and type of psychosis agrees in the main with the findings of Hammond, so that it affords support to his contention that syphilis among the insane is no more frequent in occurrence and differs in no particular of its distribution from that found in any general community.

In conclusion I have to thank the Imperial Serologist, Major R. E. Lloyd, I.M.S., as well as his assistant Rai Bahadur G. C. Mitra, for their great kindness and consideration in undertaking to perform the Wassermann test on the specimens of blood sent to their laboratory.

I am also greatly indebted to my two assistants, Military Assistant Surgeon J. H. C. Peters, I.M.D., and Civil Assistant Surgeon Jyotirmay Roy, M.B., for their valuable help in carrying out the investigation and in preparing the tables of figures.

It is hoped that as soon as the pathological laboratory is constructed and equipped for the use of this Asylum, a further examination on the population of the Asylum, cytological as well as serological, will be carried out. Such an investigation will have the additional interest in that it should be able to furnish some information on the results of the anti-syphilitic treatment which is now being carried out on lines suggested to me by the late Colonel W. D. Sutherland, C.I.E., I.M.S.

AUTO-HÆMIC OR AUTO-SERUM THERAPY.

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IN introducing this paper by Dr. D. N. Sen, Pathologist of the Sambhunath Pandit Hospital, I must admit that I have no first-hand acquaintance with the literature of auto-hæmic therapy.

At the same time, the subject appears to be an extraordinarily interesting one, and I fully sympathise with Dr. Sen's desire to urge its further investigation.

The first man whose case he reports is a dresser of the Sambhunath Pandit Hospital.

I saw the patient at intervals during the course of his illness, and it was only after Dr. Sen tried auto-hæmic therapy that any progress was made.

The man is now normal and doing his regular work.

The treatment appears to have had beneficial results on several otherwise intractable cases in this hospital.

DR. SEN'S PAPER.

The subject of auto-hæmic therapy, or treating a patient with his own blood, though not a new idea, has still some novelty in the fact that it is now being studied in a more systematic manner and in the light of fuller knowledge than before. Even in olden times the blood was used as a remedy, but there is nothing on record to show what the technique was or whether the method became popular and lasting. The re-discovery of the healing power of the blood is entirely the result of laboratory work. The treatment is based on scientific principles and is similar to auto-vaccine therapy. In bacterial diseases it is now a well established practice all the world over to secure some of the germs causing the disease and cultivate them. Afterwards suspended in a solution they are killed by heat and injected into the patient whose sickness they have caused. The dead germs or their products stimulate the formation of antibodies.

But in case of auto-hæmic treatment a few drops of blood are drawn from a vein of a patient and added to some sterilized distilled water. This is then subjected to certain laboratory processes by which a solution containing the products derived from the splitting up of the highly specialised constituents of the blood is obtained. Ten or twenty drops of this serum or solution thus prepared are injected under the skin or into a vein of the patient, which stimulate cell metabolism to a very high degree.

The auto-hæmic treatment.—To explain the mode of action of auto-hæmic treatment one must recall the following physiological facts:—

(1) The healing force of Nature resides in the blood. It carries nourishment to the cells of the body, each of which selects for its use what it requires, and carries from these cells waste products for excretion by the lungs, kidneys and skin. It carries the means of repair when an injury occurs. But it does more than this. It contains the means of defence against the invasion of micro-organisms and toxins.

(2) In a diseased person the organs are sluggish, *i.e.*, they fail to perform their functions properly and excrete the dead and waste products and, as a result, the cells themselves retain an excess of waste products, while the blood which is carrying a portion of these to the organs of excretion is not relieved of its burden and, consequently, the whole body is bathed in blood containing an undue amount of waste materials. In this conclusion assimilation and nutrition of the body are impaired or retarded.

(3) The solid content of the blood is nearly all protein. Hæmoglobin is a highly specialised protein. All proteins can be split up by acids, alkalies or ferments into proteoses, peptones and amino-acids. These amino-acids are powerful stimulates of cell metabolism.

(4) *Blood is hæmolysed by distilled water.*—When blood is put into distilled water osmotic changes are bound to occur. The extracellular pressure of the water being less than the intracellular, the blood corpuscles rupture allowing the hæmoglobin and previously inactive intracellular ferments to escape and enter the surrounding fluid. Before this occurs, the fluid is opaque, because of the obstruction to light offered by the red cells, but on the completion of hæmolysis the fluid becomes transparent. The stroma now settles to the bottom while the hæmoglobin diffuses into the fluid, making it red but perfectly transparent.

(5) Finally, we are but at a beginning of our knowledge concerning the significance of changes in the composition of the blood. It is now being realised that constituents present in quantities too minute to be isolated by chemical methods exercise a profound influence upon the body at large, such as enzymes, hormones, toxins and anti-toxins. Biological and more delicate chemical methods will have to be resorted to, in order to gain a more complete knowledge of this great medium of interchange between the various tissues, which is not only the nutritive medium and the sewer of the body, but also its healing agency.

Remembering all the above facts it will be understood that when we use as a basis for our serum treatment the blood of a diseased person we collect some of those imperfect cell products which are causing the disease. Having drawn the blood, the next step is to subject it to the following laboratory processes—dilution, lysis, and thermolysis. Then the resulting solution containing ferments liberated and activated by these processes is injected into the patient. These substances gaining entrance into the circulation provoke a decided reaction and stimulate cell metabolism in a most natural manner and to a very high degree.

The agents used are few in number:—(1) Normal serum; (2) defibrinated blood; or (3) the hæmolysed blood of the patient.

Methods of administration.—All the above may be given subcutaneously or intravenously. The latter method is prompt and more efficacious. There is no danger from anaphylaxis attending the use of the above agents, provided (i) the injections are given within seven days of one another and (ii) that the patient has not taken any bacterial or other serum injections—normal or immunised—within the last year or two. If these provisions cannot be ensured it is wise to begin by administering a small quantity, otherwise the reaction may be unpleasant, though never serious. It has been established that, compared with animal serum, there is practically no danger from anaphylaxis attending the use of human serum.

Range of applicability.—This treatment may be used with advantage in any complaint which is caused by faulty metabolic processes, or

abnormal conditions of the blood, no matter in what part of the body the complaint is located, no matter to what cause it may be attributed, no matter by what name it is designated. But it must not be taken as a panacea. There is a considerable number of cases in which it is not indicated and to which it is not applicable. It is of no avail in cases of mechanical or organic origin. To what extent it may be used with benefit in acute bacterial disease has not yet been fully determined. Bacterial therapy has already been tested. Its general usefulness and limitations are well established. It is not out of harmony with or contradictory to the idea of auto-hæmic therapy but rather confirmatory. The clinical results obtained by auto-hæmic treatment are the crucial test of its value. These outweigh all laboratory observations and theoretical deductions.

CLINICAL CASE.

Deonarain, H. M., aged 45, a dresser of this hospital in May, 1920, was suddenly attacked with pain in the right shoulder. During the next 4 or 5 days the pain increased and movement was limited. There was no swelling of the joint. The pain gradually extended down the whole arm and was rapidly followed by flaccid atrophic paralysis of all the muscles. In the course of 15 days the paralysis was complete, so that he could not move his joint or raise his arm. The pain all along the limb was constant and severe. Cutaneous sensibility to pain was much decreased, though not completely lost. In the course of two months the atrophy amounted to a difference of 2 in. in the middle of the upper arm. Careful examination failed to discover any local cause or any physical signs in the joints or other parts of the limb. He gave a previous history of gonorrhœa and syphilis, but not of gout or rheumatism. Diagnosis—Brachial neuritis.

This appears to be similar to a case quoted by Dr. Savill in his *Clinical Medicine*, page 1070. His diagnosis was brachial neuritis. *Treatment.*—Had seven injections of auto-hæmic serum, dose 1 c.c.—5 c.c., in course of three weeks in July, 1920. *Result.*—Complete recovery. Returned to his work on 1st August, 1920. During the treatment no untoward symptoms developed nor there was any reaction such as fever.

The blood and urine were normal from the beginning.

After failing to get improvements with salicylates, pot. iodide, and mercury, auto-hæmic treatment was resorted to. No other medicine was given during the course of this treatment.

R. M. Dutt, H. M., aged 30, admitted July, 1920, had been suffering from gonorrhœa for the last 15 days. Discharge contained numerous gonococci. Had 6 injections of auto-hæmic serum (1 to 5 c.c.) in course of 3 weeks.

Result.—Complete recovery.

No other medicine was given during the treatment.

The patient has been doing well since then. The "morning drop," which is very persistent and difficult to treat in such cases, was cured by the last two injections in the third week of the treatment. The patient is still under my observation and the morning drop has never re-appeared.

M. L. D., H. M., aged 26, admitted 31st August, 1920, had been suffering from acute gonorrhœa for one month. There was no history of syphilis or rheumatism but he had had gonorrhœa 8 years ago.

The discharge (urethral) contained numerous gonococci. Auto-hæmic treatment was resorted to. Had 8 intravenous injections of auto-serum from 1 c.c. to 5 c.c. in September, 1920. He progressed very favourably and improved much. After the 5th injection he got fever with rigor which lasted for one day. This was due to his walking a distance of 2 miles against my advice just after the injection. Rest is necessary after such intravenous injection. After the 6th injection he was cured, but complained of slight discharge making its appearance every 2nd or 3rd day. I examined this discharge for gonococci and found none. I grew suspicious, as there was some induration half an inch behind the meatus and his blood was tested for the Wassermann reaction. The result was positive 8/10. From the persistence of a non-gonococcal discharge plus the induration and positive Wassermann reaction I concluded that he had a urethral chancre too.

Novarsenobillon was injected afterwards and he was completely cured of the slight discharge. He has been doing well from the middle of October, 1920.

Sripati, I. Ch., M., aged 29, was admitted into the Sambhunath Pandit Hospital for the treatment of pain in the sacro-iliac joints. Was unable to move and confined to bed. The pain was constant, but aggravated every night. Had suffered from gonorrhœa previously.

Heart, lungs, liver, etc., normal.

Salicylates, iodide, mercury, morphia were tried but had no effect. He was put under a course of auto-hæmic treatment from 16th December, 1920. After five injections the pain subsided completely, and was able to walk about freely in course of three weeks. He is now doing well.

Ram Kuber Sing, H. M. 43, admitted on 7th December, 1920, for the treatment of pain over the lower extremities and eczema over the limbs. Ordinary remedies were tried at first, but was put under auto-hæmic treatment on 25th December, 1920. He had altogether nine injections. The eczema was cured and the pain much relieved. He is still in the hospital.

Patient No. 29, Male Ward.—Admitted into the hospital for the treatment of asthma. During the fits of attack, ordinary remedies had

no effect. $\frac{1}{2}$ c.c. of serum obtained from the coagulation of his blood was injected and he was relieved of his fit within half an hour.

The object of writing this article is to bring to the notice of the profession that good results follow the auto-hæmic treatment in many cases, where other remedies fail to do any good. I do not mean at all that it is a panacea. It may be used as a primary remedy or as an accessory one. In some instances where it fails to effect a complete cure, it may relieve the patient of many troublesome symptoms.

In short, this method of treatment is well worth a trial.

In conclusion, my best thanks are due to Major C. A. Gourlay, D.S.O., I.M.S., Surgeon Superintendent, for the encouragement and facility I have received from him and for making over a number of beds in the hospital for carrying on the auto-hæmic treatment, and to the staff of Sambhunath Pandit Hospital for their keen interest and kind help in the matter. I am also indebted to Dr. S. K. Nag, who helped me with valuable literature on the subject.

REFERENCES.

1. Forchheimer's Therapeutics of internal diseases.
2. Sajous's Cyclopædia of Medicine.
3. Savill's Clinical Medicine.
4. Vaccines and Sera by Shera (with introduction by C. Albutt).
5. Musser and Kelly's practical treatment.
6. Wells's Chemical Pathology.
7. L. D. Rogers's Auto-hæmic Therapy.
8. Adami and Macrae's Pathology.
9. Conheim on Enzymes.
10. Lerch's "Rational Therapy."
11. Golmer's "Infection, Immunity and Specific Therapy."

A Mirror of Hospital Practice

THE USES OF SODIUM CACODYLATE.

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It was in 1760 that Cadet first prepared cacodyle and cacodyle oxide. Bunsen, by oxidising these substances, obtained cacodylic acid in 1837 devoid of smell. There are several salts of this acid but the most commonly used is sodium cacodylate $(\text{CH}_3)_2 \text{AsO} \cdot \text{NaO} + 3\text{H}_2\text{O}$. It is a white crystalline powder readily soluble in water and does not disintegrate on boiling. According to Bunsen it has little or no poisonous action when pure. The salt should be neutral for administration.

In 1864 Dr. Jochhiem was the first to use this drug orally in $\frac{1}{4}$ -grain doses thrice a day, and cured several cases of chronic skin diseases. He also obtained excellent results in chronic pulmonary tuberculosis.

Heffter demonstrated that the drug splits up when given orally and appears in urine as