by secondary infection and thus have a bacterial bronchitis or pneumonia the usual treatment for these conditions should be applied.

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COMPARISON OF THE TOXICITY OF TRYPARSAMIDE AND NEOCRYL IN THE TREATMENT OF NEUROSYPHILIS

BY

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A preliminary account of neocryl (sodium succinylmethylamide-*p*-arsonate), together with some clinical and laboratory evidence of its effect on syphilis in all stages of the disease, was published by Yorke and others in 1936. While it was never intended that neocryl should be used in the earlier stages, evidence was produced that its spirochaeticidal effect was greater than that of tryparsamide when infectious lesions were treated by these drugs alone.

Glyn-Hughes's Conclusions

Glyn-Hughes (unpublished) studied the effects of these pentavalent arsenicals in cases of neurosyphilis. His study embraced 77 cases (11 G.P.I., 15 taboparesis, 25 tabes, 26 neurosyphilis), and in those treated solely by pentavalent arsenicals—59 in all—his conclusions were as under:

G.P.I.—4 cases were treated with tryparsamide and 7 with neocryl. All but one deteriorated and later required asylum treatment. One patient treated with neocryl showed improvement. It is concluded that the influence of tryparsamide and of neocryl in general paralysis with pronounced mental symptoms is very small.

Taboparesis.—5 cases were treated with tryparsamide: 1 patient was unaffected and died; 2 showed definite improvement, but 1 died later; 2 showed slight improvement, but 1 who had some degree of optic atrophy at the beginning of treatment became blind and died. 6 cases were treated with neocryl: 5 showed definite improvement, but 1 defaulted and relapsed later; the remaining patient had pronounced mental symptoms and, although he received much treatment, deteriorated and was admitted to an asylum. It is concluded that neocryl is superior to tryparsamide in taboparesis though not universally successful.

Tabes.—12 cases were treated with tryparsamide: 4 showed marked improvement; 3 were slightly improved; the remaining 5 patients were either unaffected or became worse and died. 13 cases were treated with neocryl, 2 of these being in the advanced stage: 11 cases were definitely improved (in fact, 5 of these patients were able to resume their work, which they had been compelled to give up owing to their condition); 2 advanced cases, mentioned above, deteriorated, and these patients died.

Early Neurosyphilis.—4 cases were treated with tryparsamide: 1 improved greatly and 2 others to some extent. 8 cases were treated with neocryl: 7 improved considerably and 1 improved to some extent but defaulted later.

In tabes and early neurosyphilis, therefore, treatment with neocryl was more successful than with tryparsamide, although both drugs were of much value.

Glyn-Hughes also mentions that 90 cases had been treated with neocryl without any damage to the optic nerve; and, indeed, optic atrophy previously present did

not progress, whereas tryparsamide seriously damaged the eyes of 11 patients out of a total of 46, actual blindness supervening in some of these.

The Present Investigation

Our series consists of over 570 cases treated between 1936 and July, 1939, with either tryparsamide or neocryl, or occasionally with both at different times. Included in it are a number of cases suffering from interstitial keratitis and of late cases in which a suspicion of neurosyphilis, without serological evidence, existed. The standard dose of each drug was 3 grammes intravenously once weekly until 30 grammes had been administered; but in a few cases, owing to age, infirmity, or other condition calling for caution, smaller doses were given. Approximately 8.5 kg. of each drug was employed in the treatment of the cases under review. It should be noted that neocryl is rather less soluble than tryparsamide, but 3 grammes can easily be dissolved in 20 c.cm. of distilled water.

A recent survey of the records of this series of cases, made at least twelve months after the end of treatment, has confirmed the early impression that the therapeutic results obtained with neocryl are in no way inferior to those obtained with tryparsamide. In view of this fact it seemed of importance to make an analysis of the toxic manifestations of the two compounds. The cases were unselected, but it must be remembered that early optic atrophy has always been considered an absolute contra-indication to tryparsamide therapy unless the neurological condition of the patient necessitated risks being taken. As the work progressed and it became gradually realized that neocryl was relatively harmless, this compound was chosen for cases exhibiting visual disturbance, and eventually a state of affairs was reached when neocryl was given without hesitation to all cases, even when there was evidence of optic atrophy.

TABLE I.—Summarizing the Toxic Manifestations observed in 256 Cases treated with Tryparsamide

Type	No. of Cases	No. showing Toxic Signs Before Receiving 10 gm. of Drug	Total No. showing Toxic Signs	Percentage showing Toxic Signs	Toxic Reactions						
					Jaundice	Dermatitis	Visual Disturbance	Visual Damage	Vomiting	Others	Total
G.P.I. ..	30	2	3	10	1	0	1	1	0	0	3
Tabes ..	115	23	49	43	10	8	23	4	4	5	54
Taboparesis ..	11	1	2	18	1	0	1	1	0	0	2
Neurosyphilis ..	45	6	17	38	4	0	10	4	0	0	22
Late syphilis ..	55	4	7	13	2	0	2	1	2	0	7
Totals ..	256	36	78	30	18	12	36	11	6	5	88

*One developed purpura.

†One became blind.

N.B.—47 out of the 88 reactions affected vision.

TABLE II.—Summarizing the Toxic Manifestations observed in 314 Cases treated with Neocryl

Type	No. of Cases	No. showing Toxic Signs Before Receiving 10 gm. of Drug	Total No. showing Toxic Signs	Percentage showing Toxic Signs	Toxic Reactions						
					Jaundice	Dermatitis	Visual Disturbance	Visual Damage	Vomiting	Others	Total
G.P.I. ..	58	0	3	5	0	1	0	1*	1	0	3
Tabes ..	90	1	7	8	3	0	0	2	1	1	7
Taboparesis ..	31	1*	3	10	2	0	0	0	0	0	3
Neurosyphilis ..	50	4	9	18	2	4	0	0	3	0	9
Late syphilis ..	85	1	5	6	2	2	0	0	1	0	5
Totals ..	314	7	27	9	9	7	0	4	6	1	27

* One had optic atrophy before treatment and the visual condition deteriorated; 9 other cases with optic atrophy were treated without ill effect.

† One suddenly became blind.

‡ One died of toxic jaundice.

The toxic reactions were both immediate and remote ; as shown in the two tables they were considerably more frequent in the tryparsamide series than in the neocryl group. The commonest immediate reaction was nausea or actual vomiting, and this was in most cases easily controlled by premedication with glucose. Nitritoid crisis was never encountered. Some patients complained of vague body pains in the first twenty-four hours after injection, but these seemed to be of little moment and no ill effects were observed on continued administration of the drug. The later effects comprised jaundice, dermatitis, albuminuria, neuritis, herpes, and visual disturbance or damage.

One death occurred in a taboparetic who had received 57 grammes of neocryl and developed jaundice. Purpura was seen in a case of tabes under treatment with tryparsamide.

In the event of visual disturbances, such as the sensation of flashing lights or shimmering vision, the drug was withdrawn and the patient kept under observation by the ophthalmologist. If permanent damage was reported the same drug was not given, but if no damage was apparent treatment by pentavalent arsenicals was restarted with caution, and preference given to neocryl. Neocryl did not cause any functional visual disturbance, but in one case after nine doses of 3 grammes sudden and complete blindness occurred. The blindness which followed in 3 cases treated by tryparsamide was gradual in its development. In 3 cases optic atrophy present before the administration of neocryl became worse, but in 9 other known cases no ill effect was produced.

Summary and Conclusions

A series of 570 unselected cases were treated either with tryparsamide or neocryl. The drugs were given in equal amounts, and 256 received tryparsamide and 314 neocryl.

About twelve months after the work had been completed a survey was made of the records with a view to comparing the therapeutic effects and toxic manifestations of the two compounds. This survey confirmed the earlier impression that neocryl is not in any way inferior to tryparsamide as a therapeutic agent and that toxic effects from its use are much less common than are those caused by tryparsamide. Of 256 cases treated with tryparsamide 78 exhibited toxic manifestations, whereas of 314 cases treated with neocryl only 27 showed toxic signs.

Both compounds may cause jaundice, dermatitis, and other undesirable reactions that are seen after the administration of trivalent arsenicals ; but it is chiefly in its relative innocuity to the optic nerve that the advantages of neocryl become apparent.

Visual disturbance occurred in 47 of the 78 cases which reacted unfavourably to tryparsamide: in 36 of these the signs were subjective, but in 11 they were objective, 3 of the latter patients becoming totally blind.

Neocryl could, however, be held accountable for only one case of visual damage. This occurred in a patient with tabes dorsalis, who unfortunately became suddenly blind ; before treatment the patient did not complain of subjective signs and the acuity of vision was apparently good, but it was not possible to have his eyes examined by an ophthalmic surgeon.

It would appear from this analysis that neocryl is to be preferred in all cases of neurosyphilis in which the administration of pentavalent arsenicals is necessary.

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RECEPTION OF AIR RAID CASUALTIES

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Successive air raids have led to the modification and improvement of the preconceived scheme for the treatment of air raid casualties in a large provincial hospital. The following scheme may serve as a basis for further modification according to the needs and capacity of various hospitals. As the hospital here discussed contains a first-aid post, in practice the majority of casualties have been arriving direct from the scene of the raid ; but the scheme would also serve, with slight alterations, for patients already treated in a first-aid casualty post remote from the hospital.

Obviously some medical officers will have to fulfil dual roles. The rapid disposal of patients after a raid is of the greatest importance so that a surgeon or physician who has finished his examination in the out-patient department may be available in the wards or theatres. In the wards the patients are seen and examined by a senior surgeon and physician, and a preliminary note is taken at the bedside. It is suggested that a form similar to the one printed below may be found useful in briefly recording the pertinent data. The use of the figures for charting multiple injuries and lacerations offers a more rapid and comprehensive record than a long description.

SURGEON

Name.....Age.....Sex.....Date.....

Address.....Time of
Admission.....

Description of Injuries :

Notes :

Degree of Shock :

Mild

Moderate

Severe

Treatment :

Morphine
A.T.S.
Fluids : Mouth ..
Parenteral..
O₂ : Method ..
Duration ..
Flow ..
Cortin

Time			

Anaesthetic.....Time.....

Operation.....

Immediate convalescence :