Follow-up

The figures of patients returned to duty may be completely misleading; they may prove the efficiency of treatment, or may merely reflect the medical officer's standards and principles. In our experience, even in the same hospital one medical officer returns to duty a man whom another would never regard as fit to return. Nor is a follow-up altogether reliable, for whilst it may reveal the relapses of the too optimistic doctor just mentioned, it fails to take into account the type of case *received* by the different hospitals, which depends on the Command psychiatrist and the type of case he considers appropriate for treatment. A hospital which is hospitable to early psychotics will show poorer returns than one which refuses them. But although the follow-up is of limited use in comparing one hospital with another, it should, if taken over the country as a whole, act as a guide as to the efficacy of returning the hospital neurotic to his unit. Our figures in the follow-up, for what they are worth, are about 20% returned to duty*; and 60% of those returned remained satisfactory after three months; the rest proved unsatisfactory. If it is considered that this figure shows a poor result, as indeed it does, it is to be borne in mind that on medical recruiting boards the methods for detecting neuroses are so much less adequate than in the case of other diseases, and that therefore to a large extent we, like the Command specialists, are doing the work of the boards and discharging men who should never have been admitted to the Army. The figures above show 42% of our cases as unsuitable, even after selection by the Command specialists, who have already discharged a large number as obviously unsuitable.

Courses of Instruction

The expert recognition of the neuroses at an early stage is an urgent necessity not only to exclude those who are unfit for service and to send those requiring treatment as early as possible, but to prevent others breaking down. Much valuable time and space in hospitals which should be reserved for the true war neuroses would thus be saved; moreover, hospitalization may render them unfit for their civilian occupation, which may be just as necessary to the war effort as soldiering. The loss of man-power on this score alone has been very considerable.

The training of psychiatrists in psychopathology and the diagnosis of the neuroses has therefore been perhaps the most important function of the 41st General Hospital during its year of work. Three courses each of six weeks' duration have been held, and almost all the twenty medical officers so trained have been appointed to psychiatric posts. But the ultimate necessity for training the *regimental officer* to diagnose the neuroses and to understand them (although he may not be called upon to treat them) is a no less important consideration for the future.

Synopsis

The article discusses the explanations of the relative frequency of anxiety states in this war as compared with conversion hysteria, as revealed in the table of diagnosis. The importance of predisposing factors, constitutional and psychological, even in the war neurosis is proved by the data. The problem of aggravation by and attributability to war service is also discussed. The patient's previous adaptation to life and his position in the family, and other aetiological factors such as the type of onset, lead to a discussion of the types of treatment employed, with their results, including return to duty.

I wish to thank Colonel G. Will, formerly commanding officer of the 41st General Hospital, for permission to publish this report, and also my colleagues, especially Major E. Miller and Major Maberly, who have provided most of the clinical data.

* These figures were taken before the "Annexure" Scheme was introduced, and therefore refer to general duty.

**SULPHAPYRIDINE IN OPHTHALMIA
NEONATORUM**

BY

ARNOLD SORSBY, M.D., F.R.C.S.

ELIZABETH L. HOFFA, L.R.C.P.&S.Ed.

AND

ELSPETH W. SMELLIE, B.M., B.Ch.

(White Oak (L.C.C.) Hospital)

The promise of sulphanilamide in the treatment of ophthalmia neonatorum gained early and wide recognition. Newman (1937), Fernández and Fernández (1938), Perry (1938), among American observers, and Magitot *et al.* (1938), Dollfus *et al.* (1938), Pagès and Duguet (1938), among French observers, reported good results with sulphanilamide, whilst a sulphanilamide derivative, uleron, was employed by Best (1938) and Jess (1938) in Germany and by Szinegh (1939) in Hungary. With the introduction of sulphapyridine attention was concentrated on this drug because of its selective action on the gonococcus, and numerous observers have reported highly gratifying results. These refer to relatively small numbers of cases, the largest being a series of 120 patients with gonococcal conjunctivitis reported by Lewis (1941). In this country the value of sulphapyridine has been stressed by Michie and Webster (1938), Moffett (1940), Clancy (1941), and Somerville-Large (1941). The medical officer of health for Glasgow in his annual reports for 1938 and 1939 noted that the result of the treatment of gonococcal ophthalmia neonatorum with sulphapyridine "was dramatic. Within twenty-four hours the clinical condition of the eyes had cleared up. . . . Most [indoor] cases needed only two or three days' treatment of the drug, and the average stay in hospital for a gonococcal case has now been reduced from about eight weeks to ten days." More recent experience has shown sulphapyridine to be equally effective in all forms of ophthalmia neonatorum (Somerville-Large, 1941). The dosage recommended is generally 0.125 gm. by mouth three or four times daily, and local treatment has become almost superfluous.

Several observers have reported on the use of sulphanilamide or sulphapyridine locally (Rein and Tibbetts, 1939; Bruens, 1940; Pillat, 1940; Guyton, 1941; Lewis, 1941; Panneton, 1941). It would appear that oral administration gives distinctly better results.

Personal Observations

As a war measure, St. Margaret's Hospital, which dealt with the in-patient treatment of cases of ophthalmia neonatorum in the London County Council area, was transferred to White Oak Hospital. For the period September 1, 1939, to December 31, 1941, 322 cases were admitted. At the beginning the routine local treatment previously carried out at St. Margaret's was continued, but towards the end of 1939 treatment by sulphapyridine (M & B 693) was instituted, at first tentatively and subsequently as a routine measure. Of the total of 322 cases, 273 were treated by sulphapyridine by mouth, most of the remaining 49 constituting the earlier group treated by local medication. The incidence of gonococcal infection was 27.3%, there being 89 gonococci-positive cases and 233 gonococci-negative. Thick purulent discharge was present in 93 cases (28.7%); 36 of these were gonococci-positive and 57 gonococci-negative. The sex distribution of the affected infants was approximately equal—168 males and 154 females. There was a rather high proportion with infec-

tion confined to one eye—98 cases (44 right eye, 54 left eye) in this series of 322—that is, 30.5%.

Sulphapyridine was used irrespective of the causal organism, and clinically there appeared to be no obvious specially selective action on gonococci. The following table shows comparative results of treatment with and without sulphapyridine, and also makes it clear that the therapeutic effect of sulphapyridine is not confined to ophthalmia neonatorum of gonococcal origin.

Table of Comparative Results

Clinical Cure	Local Treatment (Classical Methods)			General Sulphapyridine Treatment		
	Gonococci- positive	Gonococci- negative	Total	Gonococci- positive	Gonococci- negative	Total
Within 8 days ..	2	5	7 (15.2%)	43	126	169 (61.9%)
" 8-30 " ..	6	21	27 (58.7%)	21	67	88 (32.2%)
More than 30 " ..	7	5	12 (26.1%)	9	7	16† (5.9%)
Total ..	15	31	46*	73	200	273

* Three cases treated by newer local methods are excluded from this total.

† Including relapses after an apparent clinical cure.

Though the series of cases treated by local methods is small it may be taken as fairly representative of the results obtained by these older procedures, for the data reflect the experience of most clinicians. The contrast shown by the sulphapyridine series is striking: 61.9% of cases were cured clinically within eight days by sulphapyridine administration, against 15.2% by local methods; and 5.9% of cases required prolonged treatment of more than thirty days, against 26.1%. The fact that as many rapid recoveries under sulphapyridine are observed in non-gonococcal cases (126 out of 200, or 63%, recoveries within eight days) as in gonococcal infections (43 out of 73, or 58.9%) is noteworthy, as sulphapyridine is regarded as a specific against the gonococcus and but feebly active against the staphylococcus and most of the other organisms commonly seen in non-gonococcal ophthalmia neonatorum.

The differential incidence of organisms other than gonococci is of some interest. Pus cells only, without any organisms in the smear or culture, occurred 53 times, and the remaining 180 cases showed the following organisms:

Staphylococcus	111
Staphylococci	56
" and diphtheroids	25
Staphylococcus albus	17
" aureus	13
Other cocci	20
Gram-positive cocci	6
Meningococci	4
Pneumococci	3
Streptococcus haemolyticus	2
" viridans	1
Micrococcus catarrhalis	2
" tetragenus	2
Bacilli	49
Diphtheroids	20
Koch-Weeks's	8
Coliform	6
Gram-positive	3
Gram-negative	3
Xerosis	3
Morax-Axenfeld's	3
Hoffmann's	2
Friedländer's	1

The present evidence shows that sulphapyridine is as effective against staphylococcal ophthalmia neonatorum as against gonococcal infection. It also appears to be effective against the other and less common causal organisms, for such few cases as have proved refractory to treatment were gonococcal in character. Delay in starting sulphapyridine treatment does not seem to influence its efficacy: 83 cases (63 non-gonococcal and 20 gonococcal) first received

sulphapyridine treatment after the infection had been established for more than eight days; these cases responded as well as less-established infections did.

In assessing the value of sulphapyridine treatment, the gratifying data shown in the table must be regarded as an understatement, for many of these cases received a dosage which is now recognized as less than the optimum. With further experience fuller doses are being used, and the response to treatment is better than the table would indicate. Previously, an eighth of a tablet (0.062 gm.) was given four times daily, and this was subsequently raised to doses of one-sixth of a tablet. At the present an initial dose of half a tablet (0.25 gm.) is given, followed by doses of a quarter tablet (0.125 gm.) every four hours, day and night, so that the total twenty-four-hourly dose is 0.875 gm. on the first day and 0.75 gm. on the subsequent days. With the smaller doses it was found that a clinical cure could be effected with 2 to 2½ gm. over six to eight days.

No complications of any consequence were seen in the present series. Occasionally cyanosis developed, and in two instances there were attacks of dyspnoea. In these cases administration was continued after missing one or two doses. As a rule tolerance is good, as shown by the physical comfort of the babies and the regular gain in weight. In two cases in which administration of the drug had to be prolonged the blood count remained normal. In a few instances there was a relapse after an apparent clinical cure of the infection, and sulphapyridine treatment had to be instituted again.

Corneal complications were not observed during treatment. Seven gonococci-negative and 13 gonococci-positive patients who had hazy corneae on admission were discharged with normal corneae. Four gonococci-negative and 7 gonococci-positive cases admitted with corneal ulceration improved rapidly under treatment.

Management of Cases of Ophthalmia Neonatorum

On admission a swab of the pus is taken, both for a smear preparation and for culture. The eyes are then irrigated with a bland lotion, such as 0.5% saline solution. Guttae atropinae sulphas 1% and drops of medicinal paraffin are instilled as a routine measure in all cases, and half a tablet of sulphapyridine (0.25 gm.) crushed into powder is given by mouth in a teaspoonful of water or milk. Sulphapyridine administration is continued in doses of 0.125 gm. every four hours, day and night, until twenty-four hours after a clinical cure is obtained. Usually this means treatment for three to five days, with a total dosage of about 2½ to 4 gm. Local treatment consists of three-hourly irrigation with saline solution during the first day in cases with profuse discharge; as a rule there is no need for further irrigation on the subsequent days. After irrigation medicinal paraffin is instilled as a precaution against the sticking together of the lids. Atropine is instilled three times daily in cases with corneal haze or ulceration.

Under this treatment swelling of the lids generally subsides within twelve hours after admission; purulent discharge disappears within twenty-four hours, so that a threatening purulent ophthalmia becomes a simple conjunctivitis giving no anxiety. The eyes are either dry or very nearly so within seventy-two hours.

Discussion

The view often expressed in recent literature that the advent of the sulphonamides has revolutionized the treatment of ophthalmia neonatorum is no exaggeration, and there is validity in the opinion expressed by Somerville-Large that "failure to administer the sulphonamide group of drugs immediately ophthalmia neonatorum is recog-

nized amounts to criminal negligence." There is now ample evidence that sulphapyridine cures with dramatic rapidity, making unnecessary prolonged hospitalization, such procedures as external canthotomy, and constant or frequent local treatment. With the duration of the affection cut short, the dreaded corneal complications of ophthalmia neonatorum have now become almost a matter of historical interest. It is, however, still essential that infants with ophthalmia neonatorum should receive in-patient treatment, for the new therapy requires care as meticulous as was the nursing necessitated by the classical methods. If it was true that the management of a case of gonococcal ophthalmia by local therapy was one of the severest tests of nursing, it is also now true that the treatment of a case by present-day methods is a test of a practitioner's capacity to apply medical knowledge with efficiency and precision. It is possible that eventually a satisfactory local therapy with sulphonamides will be evolved, but the classical methods of local treatment with or without such adjuvants as shock therapy have no longer any place in the treatment of ophthalmia neonatorum, especially as the sulphonamides have proved satisfactory not only for gonococcal ophthalmia but also for the other forms of ophthalmia neonatorum.

Summary

An account is given of 273 cases of ophthalmia neonatorum treated with sulphapyridine, and of a control group of 46 cases treated by the classical methods of local therapy.

The results obtained by sulphapyridine justify the description of this method as a revolutionary advance.

Sulphapyridine has proved as effective in non-gonococcal ophthalmia as in the gonococcal variety.

The routine employed in the ophthalmia neonatorum unit of White Oak (L.C.C.) Hospital is described.

We are indebted to the Medical Officer of Health for the London County Council for permission to publish these findings, and to the Matron and Sister Condon of White Oak Hospital for their collaboration.

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K. L. Pickrell of the Department of Surgery, Johns Hopkins Hospital (*Johns Hopk. Hosp. Bull.*, 1941, **69**, 217), in a preliminary note records the results obtained in the treatment of 115 burnt patients with 3% sulphadiazine in 8% triethanolamine. The results have been so good that it has been decided to continue the use of this method in the treatment of all burns at the Johns Hopkins Hospital for the time being. A patient whose burns are severe enough to need treatment in hospital is placed at once on sterile sheets in the accident room and treatment for shock is immediately instituted. Cultures are taken from the burnt areas. While the surgeon is scrubbing up, the nurse sprays the burnt areas with the sulphadiazine mixture. The burnt areas are not washed or cleansed in any other way. Spraying is continued every hour on the first day, every two hours on the second day, every three hours on the third day, and every four hours on the fourth day. Pickrell points out that sulphadiazine can be safely used in and around the eyes with impunity. It can be detected in the blood within some hours after having been sprayed on the surface of the burn.

SULPHAPYRIDINE AS AN AID TO THE POST-OPERATIVE TREATMENT OF LARYNGEAL DIPHTHERIA ASSOCIATED WITH MEASLES

BY

D. F. JOHNSTONE, M.R.C.S., L.R.C.P., D.P.H.
Medical Superintendent, City Isolation Hospital, Plymouth

The association of diphtheria with measles is always a serious matter, and still more so if the disease invades the larynx, rendering operative treatment necessary for the relief of obstructive symptoms. My own experience in the past has been that most of these cases succumb to a fatal bronchopneumonia, but encouraging results in the treatment of measles and its complications with sulphapyridine (M & B 693) led me to try this form of therapy in the following four cases, all of which recovered. The occurrence of laryngeal diphtheria and measles is not common in the limited area served by this hospital; but the results in this small series of cases suggest that this drug has a sufficiently favourable prophylactic effect to warrant its trial in similar cases.

Notes on Four Successful Cases

Case I

A girl 2 years old was admitted on January 28, 1941, with a diagnosis of measles and bronchopneumonia. The rash was first noticed by her parents four days before admission, and the doctor was summoned because of their alarm at her "noisy and rapid breathing." Examination showed a well-nourished child. Her temperature was 102°, the pulse 150, and respirations 60. She had a croupy cough, hoarseness, and well-marked stridor. There was very slight recession, but no cyanosis or acute distress, and the trunk and face showed evidence of a fading morbilliform rash. The throat was congested but quite clean. There were coarse rales over both sides of the chest but no localized dullness. A diagnosis of measles, bronchopneumonia, and ? laryngeal diphtheria was made. As the child was restless she was given 2 drachms of paraldehyde in saline per rectum, 28,000 units of diphtheria antitoxin intramuscularly, and oxygen through a nasal tube. In addition she received 1 gramme of sulphapyridine orally, followed by 0.5 gramme every four hours. Two hours later her general condition was fairly good, but the stridor was more pronounced and she was still rather restless. Half a grain of luminal was prescribed and she was placed in a steam tent. Four hours later there was less stridor and her colour was still satisfactory. At 10 p.m. the same day the improvement had been maintained, and a further half-grain of luminal was all that was required to give her a good night. Next day she was very much better, sitting up in bed playing. There was still some stridor, and the signs in her chest remained much the same as on admission. The temperature had fallen to 99.4° and the pulse and respirations to 130 and 32 respectively.

On the 30th there was hardly any stridor, but slight cyanosis was present and she was rather drowsy. In view of this the sulphapyridine was reduced to 0.5 gramme six-hourly. The temperature was normal, but the pulse and respirations remained round about 130 and 30.

On the morning of the 31st—that is, three days after admission—her general condition was much worse. Recession and stridor had reappeared; she was still cyanosed, and the chest was full of coarse rales. Half a gramme of sulphapyridine was again given four-hourly. Her general condition grew steadily worse and she showed all the physical signs of progressing respiratory obstruction, so that at 2 p.m. a tracheotomy was performed. This gave her immediate relief, resulting in rapid improvement of her colour and general condition. Half a gramme of the drug was continued at four-hourly intervals until the tube was removed three days later, and shortly after this the physical signs in her chest cleared up, the wound healed rapidly, and she was discharged from hospital on March 7, five and a half weeks after admission.