Hypodermic syringe.
 Needles—hypodermic: (a) 1½ inch exploring 24 P.W.G.
 (b) 2 cm. fine.
 Lang speculum.
 Fixation forceps—2 teeth into 3 teeth.
 Lister's conjunctival forceps.
 Squint scissors: (a) light; (b) heavy.
 Strabismus hook.
 Needle holder (Silcock).
 Iris forceps: (a) Lang's curved; (b) Barraquer's.
 De Wecker scissors with blunt points.
 Couper's capsule forceps.
 Iris retractor. Squint needles.
 Silk: No. 1, white; No. 0, black.
 A.C. wash-out nozzle.
 Rubber tubing to fit nozzle.
 Undines.
 Keratomes: (a) large straight; (b) small straight.
 Graefe knives. Daviel's spoon.
 Dissection needles. Scalpels.
 Other general surgical instruments from the general theatre.

To this list an evisceration scoop might usefully be added. This list does not include a magnet, as its author feels that opportunities for useful employment of the magnet will be strictly limited.

In London it is planned to have an ophthalmologist available at each casualty clearing hospital and at the base hospitals. In the nature of things their duties in emergency will not be purely ophthalmic, but the planned distribution of available talent should be valuable at the moment of crisis. It is assumed that the treatment of eye injuries will be carried out under conditions allowing the use of light and water. Provision is being made for alternative—and local—supply of light and water should the main supply of either be cut by enemy action or deliberately as a precautionary measure.

The organization that will emerge after the anticipated brief and intensive attack on the civil population cannot at present be foreseen. At its best there will be a rapid return to something like normality; at its worst a skeleton normal service will have to function besides the organization to deal with air raid casualties. The resilience of human nature and the resources of a civilization are things not easily worn down, as the martyrdom and heroism of the peoples of Spain and China in their struggles amply and nobly testify.

Summary

The home conditions likely to exist during the first few weeks after the outbreak of hostilities are discussed.

It is pointed out that organization for special ophthalmic services will be of limited value, but that it is planned to have ophthalmic talent widely distributed.

The effects of ocular injuries from gas are surveyed, together with their treatment.

The lesions from incendiary bombs and the damage from heavy explosives are discussed.

The scope of first aid and the possibilities of treatment at casualty clearing stations and at base hospitals are indicated.

My thanks are due to Dr. J. N. Dobbie of the Ministry of Health and Dr. R. C. Harkness of the London County Council for much of the information on organization contained in this paper. I am also indebted to Mr. C. B. Goulden for a similar service, for permission to use the list of equipment published here, and for kindly placing at my disposal his great knowledge of war injuries.

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SULPHANILAMIDE IN THE TREATMENT OF SCARLET FEVER*

BY

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During the last two years several reports have been made on the effect of sulphanilamide preparations in the treatment of scarlet fever. These show no unanimity in the conclusions of their authors. Proseptasine was used by Peters and Havard (1937) in the treatment of 150 cases of scarlet fever and was withheld from the same number of alternate cases which served as controls. The sum of the individual complications was the same in both groups, but they occurred in a smaller number of patients (35 per cent.) in the test series than in the control series (56 per cent.). The same preparation was used by Hogarth (1937) in a controlled series of 114 patients with scarlet fever, and he found it had no significant effect on the initial pyrexia, the initial toxæmia, or the incidence of complications. Sako, Dwan, and Platou (1938) treated 100 cases of scarlet fever with sulphanilamide, and controlled their test with a similar series of the same number which did not receive the drug. Their findings agree with those of Hogarth in that the toxic stage of the disease was not affected, but they report that complications occurred in eight of the sulphanilamide series against forty-one of the control series. Pfaffenbichler (1938) treated 150 scarlet fever patients with prontosil for eight days from the time of admission to hospital and used the same number of contemporaneous admissions as controls. Of the treated series 46.6 per cent. had an uncomplicated convalescence, whereas this occurred in only 26.6 per cent. of the control series. Cervical adenitis was seen in 14.6 per cent. of the test series against 20 per cent. of the controls, and otitis media in 6.6 per cent. of the test group and 11.3 per cent. of the controls. Scarlatinal rheumatism complicated seven of the control cases, but was absent in the test series.

Present Investigation

Starting in January, 1937, a number of cases of scarlet fever were treated with sulphanilamide (Bayer) and a similar series of control cases were simultaneously treated without the drug. Anti-scarlatinal serum was given to those patients in both groups who were thought to require it, irrespective of the giving of sulphanilamide. It had already been realized in this hospital that sulphanilamide had little or no effect in the acute febrile stage of scarlet fever, except perhaps in patients with a frankly septic type of the disease, and it was thought that the incidence of complications would probably give the best indication of the value of the drug. The test was therefore limited to children under the age of 10 years, as these would include the age groups which normally show the highest complication rates. Alternate patients, as admitted to certain particular wards, were allotted to test and control groups. No selection whatsoever was made in the distribution of cases. The general treatment of the patients in the two groups differed in no way; they were nursed together in the same wards, which contained approximately equal numbers of each group, and received the same nursing and medical attention and the same diet.

The test was continued for twelve months and was limited to three wards. Of the 576 patients, 287 fell into

* Based on a paper read before the Goole and Selby Division and the Leeds Division of the British Medical Association.

the test series and 289 into the control group. The age and sex distribution and day of disease on admission to hospital are given in Table I, and are shown to be comparable in the two groups.

TABLE I.—Age and Sex Distribution and Day of Disease on Admission to Hospital

Age (years) :		0-1	1-4	5-9		Eliminated from Series	Total
Test series	Males..	2	71	37	110		
	Females	1	52	90	143		
	Total ..	3	123	127	253	34	287
Control series	Males..	0	64	45	109		
	Females	1	61	90	152		
	Total ..	1	125	135	261	28	289

Day of Disease on admission :	1st	2nd	3rd	4th	5th	6th	7th	Later than 7th	Total
Test cases ..	17	101	69	41	12	6	0	7	253
Control cases ..	18	104	69	38	17	8	2	5	261

It was necessary to eliminate thirty-four and twenty-eight patients from the test and control series respectively, and the reasons for their removal are shown in Table II. Chicken-pox was introduced into all three wards, and prolonged the stay of certain children in hospital. All cross-infected patients have therefore been removed from the series. The small number of patients of ten years or over who were admitted to these wards have also been removed from the series.

TABLE II.—Cases eliminated from Test and Control Groups

Reason for Elimination	Test Series	Control Series
10 years or older..	13	11
Late case ..	1	1
Revision of diagnosis ..	3	4
Concurrent surgical condition ..	3	1
Concurrent scarlet fever and whooping-cough	1	1
Cross infections ..	13	10
Total ..	34	28

The amount of sulphanilamide given was of necessity, in a test of this type, a matter of routine, and, after a trial period previous to the treatment of the cases here reported, was fixed at 0.75 gramme for children under the age of 2 years, 1.5 grammes for children of 3 to 7, and 3 grammes for children of 8 and over in each twenty-four hours. These amounts were divided into three equal doses and continued until the temperature had been normal for a week in uncomplicated cases. If complications developed, administration was prolonged for as long as was indicated. Signs of sulphanilamide toxæmia were seen infrequently, and in no case gave rise to anxiety. Cases of true toxic and septic types were not seen. All patients, both in test and in control groups, suffered from simple scarlet fever, and no death occurred in either series.

Results of Treatment

The early acute stage of scarlet fever seemed to be uninfluenced by sulphanilamide except in those cases in

which some septic element was apparent: these subseptic cases appeared to benefit from the drug. The incidence of complications is shown in Table III.

TABLE III.—Complications (there were no Deaths in either Group)

	Test Series		Control Series	
	No.	Per cent.	No.	Per cent.
Uncomplicated cases ..	215	85.0	195	74.7
Complicated cases ..	38	15.0	66	25.3
Complications :				
Adentitis ..	13	5.1	19	7.3
Albuminuria ..	1	0.4	5	1.9
Arthritis ..	1	0.4	1	0.4
Endocarditis ..	—	—	1	0.4
Myocarditis ..	—	—	3	1.1
Mastoiditis (mastoidectomy) ..	—	—	1	0.4
Nephritis ..	—	—	3	1.1
Suppurative otitis media ..	16	6.3	27	10.3
Relapse ..	1	0.4	2	0.8
Rheumatism ..	—	—	2	0.8
Rhinitis ..	11	4.3	11	4.2
Minor sepsis ..	5	2.0	6	2.3
Total complications ..	48		81	

Individual complications, with two exceptions, show a greater frequency in the control group than in the test group, and certain complications, including rheumatism, endocarditis, and myocarditis, are absent from the test series but present in the control cases. The incidence of suppurative otitis media is greater in the control series than in the test series, the incidence of this complication being 10.3 per cent. and 6.3 per cent. respectively. Of those who received sulphanilamide, 15 per cent. show complications against 25.3 per cent. in the control group.

Prophylactic Use of Sulphanilamide

It appears, therefore, that an important action of sulphanilamide in the present mild type of scarlet fever is prophylactic in that it lowers the incidence of complications. For this reason an attempt has been made to apply this finding in the treatment of this disease. The scheme has again been limited to children under the age of 10 years. Patients are given 1 gramme of sulphanilamide daily, in four equal doses, from admission until the fourteenth day of disease, and again from the twenty-first day of disease to the twenty-eighth day, when uncomplicated cases of simple scarlet fever are discharged from hospital. In this way a patient receives sulphanilamide for a maximum continuous period of fourteen days, which includes the acute stage of the disease. During the third week, when the patient is entering convalescence, sulphanilamide is withheld. On the twenty-first day of disease, in the majority of uncomplicated cases treated in this hospital, the patients are up and dressed and may possibly come into contact with some source of secondary infection. This in scarlet fever wards is most likely to be streptococcal, so sulphanilamide is resumed from the twenty-first to the twenty-eighth day—the day of discharge.

Since March, 1939, when this method of treatment was instituted in this hospital, to the time of writing—a period of four months—seventy-nine patients have received the

suggested small prophylactic dose of sulphanilamide. The results are as follows:

Age Groups	No. of Patients	No. of Complications	Complications
0-4	54	9	Suppurative otitis media 4 Adenitis 2 Paronychia 2 Albuminuria 1
5-9	25	0	
Total ..	79	9 (11.4%)	

The number of patients so treated is small and the series has not been controlled, but the results are sufficiently good to encourage further trial of this method. The most striking effect is the comparative absence of the many minor septic sequelae which are a common feature of scarlet fever wards and which prolong the patients' stay in hospital.

Toxic effects due to sulphanilamide appear to be uncommon in children. Cyanosis has not been seen in this group of seventy-nine patients, but a maculo-papular erythema of morbilliform type, which first appeared on the extremities, then on the face, and finally on the body, has occurred in two cases. In one patient this was accompanied by pyrexia, which subsided within forty-eight hours of withdrawing the drug. No other toxic effects were noted.

Summary

In a series of 253 cases of scarlet fever in children under 10 years of age, treated with sulphanilamide, the complication rate was 15 per cent., as compared with 25.3 per cent. in a similar series of 261 controls.

It is suggested that sulphanilamide has a place in the treatment of scarlet fever, and one of its chief values is prophylactic.

Seventy-nine patients have been given small doses of sulphanilamide from admission to hospital until the fourteenth day of disease, and again from the twenty-first to the twenty-eighth day. In this group the complication rate was 11.4 per cent.

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Statistics recently published by the French Ministry of the Interior show a decline in the ratio of fatal accidents to the number of motor cars in circulation. In 1925, when there were only 860,289 motor vehicles in circulation, the fatal accident ratio was 2.35 per 1,000. In 1937, when there were 2,820,816 motor vehicles in circulation the corresponding ratio was reduced to 1.59 per 1,000. Both in 1925 and in 1937 more than half the motor accidents were due to faults of the drivers (59 per cent. in 1925 and 53 per cent. in 1937). Only in 21 to 28 per cent. of cases could the fault be ascribed to others than the driver, to pedestrians, etc. It seems hardly just, therefore, that for every driver there should be two passers-by victims of motor accidents. Material faults of construction were held responsible in only 1.5 to 3 per cent. of the accidents, and the state of the roads in only 5 to 11 per cent. As for the frequency of accidents in different parts of the country, it might have been supposed that the most densely populated areas would suffer from the highest accident rates, but this has proved not to be the case.

Clinical Memoranda

Autogenous Intramedullary Bone Pegging

In cases of non-union or delayed union in fractures of long bones and in occasional instances where the ordinary methods of mechanical fixation are inadequate, the necessity for some mode of internal splintage may arise. Many methods and materials have been tried, but the autogenous bone graft is undoubtedly the most certain, as fixation is through the medium of living bone. The insertion and fixation of the graft presents difficulties, and

A: The graft has been removed, exposing the medullary cavity. B: The graft (marked with heavy diagonal lines) has been driven from below upwards into the medullary cavity of the upper fragment until its lower end is flush with the fractured surface, and the fragments have been placed in alignment. C: The graft has been driven downwards, so that one half remains in the medulla of the upper fragment and one half in the lower fragment.

different methods have been employed with varying success. The following method of intramedullary pegging appears to possess some advantages, and is certainly simple and effective in its application. It is peculiarly applicable to fractures of the tibia, although it has been employed in other parts of the skeleton.

The following are the steps of the operation:

A long incision is made on the antero-medial aspect of the leg and the flaps are dissected up on either side, exposing the corresponding surface of the bone covered by periosteum. The fracture is then fully exposed by bending the leg to a right-angle at the site of the lesion. In cases of non-union the ends are freshened, exposing healthy medulla, and all scar tissue is cut away. A longitudinal incision is now made in the periosteum of the longer of the two fragments of the tibia, the length of this incision being that of the graft desired—generally 4-5 inches. Transverse cuts are made at either end and the periosteal flaps so formed are elevated from the bone and turned back. By means of a circular saw a graft is cut from the exposed compact layer of the bone and removed. The transverse thickness of the graft should be such that it will fit tightly into the medullary cavity of the tibia. The peg is now driven into the medullary cavity of the fragment from which it was removed, the fractured ends of the bone set in alignment, and, by means of a bone punch inserted through the deficiency in the compact layer, the graft is hammered into the medulla of the other fragment to a distance of half its (the graft's) length. The ends of the bone are by this means firmly held in position and, provided that the graft is long enough and fits sufficiently tightly in the medullary cavity, no distortion is possible.

The accompanying diagrams explain, more fully perhaps than words, the steps of the operation.

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