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Evaluation of Sodium Sulphacetamide drops in the Treatment of Ophthalmia Neonatorum

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Summary

Ernest SK, Mokuolu O, Adeniyi A. Evaluation of Sodium Sulphacetamide drops in the Treatment of Ophthalmia Neonatorum. *Nigerian Journal of Paediatrics* **2001;28:50.** Sodium sulphacetamide eye drops had been used successfully in the past in the treatment of ophthalmia neonatorum (ON) but its use has decreased remarkably in recent time. The efficacy of 10 per cent sodium sulphacetamide eye drops in the treatment of ON was prospectively evaluated in 68 neonates seen in our Neonatal Intensive Care Unit over a period of six months. Excluded from the study were babies with suspected gonococcal ON, and those who required systemic antibiotics for the treatment of associated sepsis. The eye drops were instilled for one week if by 72 hours of use, clinical response was achieved, otherwise another ophthalmic agent was used. Ninety seven per cent of the neonates had clinical cure. It is concluded that sodium sulphacetamide may be a useful first line eye drop in the treatment of ON.

Introduction

THE battle against ophthalmia neonatorum (ON), which started years ago, was based on the need to prevent blindness. Blindness leads to poor self-development and inadequate capacity building that result in economic dependence.[1] At the beginning of the twentieth century, 24 per cent of the children admitted to American Schools for the Blind had visual disability secondary to ON.[2]The frequency with which ON was seen in our centre had given us considerable concern and called for prompt attention. Since the work of Crede demonstrated dramatic decrease in the incidence of ON (from 10 per cent to 0.3 per cent) after the routine application of 1 per cent silver nitrate solution to the eyes of newborn babies, safer chemical agents for the prevention and treatment of the disease had been developed.[3]

Foster and Klauss [4] after considering several opinions, suggested four levels of intervention to prevent childhood blindness and ocular morbidity from ON. These included prevention of sexually transmitted diseases, antenatal screening for genital infections, administration of ocular prophylaxis and early diagnosis and adequate treatment. The last two of the intervention model require the use of antibiotic eye drops as either preventive or therapeutic agents to avert the danger of blindness and the associated problems and complications. Hence, the need to preserve the good therapeutic agents that are presently available while research continues into developing newer ones.

Sulphacetamide sodium eye drops had been used successfully over the past several years.[5]The availability of the medication, ease of administration, therapeutic effectiveness and almost unknown side effects made the medication lend itself easily to several older clinicians for prescription in cases of conjunctivitis or ON.[5]However, its popularity waned partly because of its relative weak *in-vitro* antibacterial performance[6] and the availability of other medications which however are more expensive and less accessible in the developing countries. Because of the previous good quality, accessibility and affordability of sulphacetamide sodium in Nigeria, its clinical performance was assessed during a major study on ON in the University of Ilorin Teaching Hospital (UITH), Ilorin.

Patients and Methods

All live newborn babies delivered at the UITH, Ilorin between January 1 and June 30, 1996 were screened for ON during the first 30 days of life. The cardinal criteria for making a clinical diagnosis of ON were, swelling of the eyelid, hyperaemic conjunctiva and purulent eye discharge.[7]Where the disease was present, certain procedures were carried out. These included eye swabs for Gram and Giemsa staining, microscopy, culture and sensitivity. Topical antibiotic eye drop (10 per cent sulphacetamide sodium) was then given empirically as soon as the disease was established

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Table I

Treatment Modalities and Outcome in 112 Babies with Ophthalmia Neonatorum

Drug given	*No. Treated*	*No. Cured*
Sulphacetamide sodium	68(60.7)	66(97)
Systemic antibiotic	11(9.8)	11(100)
Both systemic and other topical*	33(29.5)	33(100)
Total	112(100)	110(98.2)

*Gentamicin and chloramphenicol eye drops
Figures in parentheses represent percentages

Table II

Age at Complete Clearance of Eye Discharges in 112 Patients with Ophthalmia Neonatorum

Age	*Clearance of Eye Discharge*	
	No	*Percent of* Total
≤ 24 hours	0	0
> 24 hours – 72 hours	85	75.9
> 72 hours – 7 days	24	21.4
≥ 8 days	3	2.7
Total	112	100.0

Table III

Comparative Cost of Common Antibiotics Useful in Ophthalmia Neonatorum

Antibiotic	*Retail Cost (Naira) for a 7- day Treatment*
Sodium Sulphacetamide	55
Gentamicin eye drops	35
Chloramphenicol eye drops	70
Erythromycin eye cream	70
Systemic erythromycin	250-750

Clinical responses were assessed at 72 hours and at one week of treatment. Where clinical signs and symptoms showed no improvement after 72 hours, a change of therapy was effected. In the analysis of the results obtained, two treatment groups (Table I) were excluded. These were (a) those with hyperpurulent eye discharges which suggested gonococcal ophthalmia; these were treated with frequent instillation of topical antibiotics and parenteral antibiotics,[8] and (b) those on systemic antibiotic therapy who were having in addition, topical ophthalmic antibiotics because they developed ophthalmia after systemic antibiotics were commenced.

Results

One hundred and twelve babies were diagnosed as having ON. As presented in Table I, 68 (60.7 per cent) of the 112 babies received sulphacetamide sodium eye drops (10 per cent solution). The organisms isolated from the eye swabs obtained consisted of *Chlamydia trachomatis, Staphylococcus aureus, S. epidermidis,* coliforms, Klebsiella spp., *Pseudomonas aeruginosa, Streptococcus pneumoniae, S. faecalis, Haemophilus influenzae* and *Neissseria gonorrhoeae.* Sixty-six (97 per cent) of these 68 had clinical cure. Purulent eye discharge that was the commonest sign cleared within 72 hours of treatment in about 76 per cent of the babies and in 97.3 per cent by one week (Table II).

The comparative retail cost of a seven-day treatment of ON is shown in Table III. It can be seen that sulphacetamide sodium is the cheapest when compared with the others.

Discussion

Assessment of the therapeutic performance of antibiotics is best carried out either *in-vitro* or *in-vivo.* Each has its respective advantages.[9] While the *in-vivo* assessment is more patient-oriented, it also gives a double advantage of both informing the clinician of its therapeutic performance at the same time as treating the patient. In contrast, the *in-vitro* method has an inherent time lag before treatment can be commenced, based on the outcome of the test. This may last a few days with resultant delay in instituting appropriate treatment. Empirical use of antibiotics becomes mandatory in these circumstances. For sulphacetamide eye drops, poor *in-vitro* performance might have led to the decrease in the rate of its prescription or its de-emphasis by some clinicians,[7] especially with the availability of newer topical and systemic agents. In the tropics, the newer topical and systemic agents are more costly and not as readily available as sulphacetamide. Also, their stability when constituted is less than that of sulphacetamide. The clinical performance of sulphacetamide on *Chlamydia trachomatis,* the present global leading cause of ophthalmia, is equally good. This represents an advantage of its use when compared with chloramphenicol and gentamicin, which are not useful in chlamydial ophthalmia. Erythromycin may be effective against chlamydial ophthalmia, but the cream forms unacceptable paste on the patients' eyes while systemic erythromycin is twice as costly compared with sulphacetamide eye drops for the same duration of treatment.

The 97 per cent cure rate obtained with sulphacetamide drops in the present study recommend the medication as the first line treatment for ON.

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