Correspondence

Diphtheritic conjunctivitis

In the article on 'Conjunctivitis and red eye',[1] only a passing reference has been made to diphtheritic infection of the conjunctiva. Though a rare condition, failure to recognize and treat it has serious consequences.

I saw my first and only case of diphtheritic conjunctivitis in an Indian soldier in Dhaka, Bangladesh, in 1947. The lateral part of the bulbar conjunctiva of one eye was covered with a yellowish-grey membrane similar to that seen in faucial diphtheria. Having recently seen a number of cases of paralysis of the palate and of accommodation secondary to 'jungle sores', I looked at the patient's legs and found a number of partly healed sores on his shins. I immediately sent the patient to an ophthalmologist who confirmed the diagnosis.

Diphtheritic conjunctivitis was first described by von Graefe in 1854.[2] He found that the condition was more common in children and usually occurred during epidemics, with or without diphtheritic lesions on the fauces or the nose. If the cornea was involved perforation was likely, with loss of the eye. No effective treatment was available at that time. Duke-Elder gave an excellent description of the condition in his *System of Ophthalmology*, published in 1965.[3] However, neither von Graefe nor Duke-Elder mentioned the connection with diphtheritic leg ulcers, though it is well recognized that 'jungle sores' may be infected with the diphtheria bacillus. Most modern texts either do not mention the condition at all or devote only a couple of lines to it.

It may well be that diphtheritic conjunctivitis, secondary to 'jungle sores', occurs in non-immunized hill tribes in Nagaland and similar areas. I feel that it is important to draw attention to this uncommon but serious condition which can now be effectively treated.

20 September 1997

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Susceptibility of *Staphylococcus aureus* at a rural clinic

The high level of antibiotic resistance of *Staphylococcus aureus* isolates is well known. O'Brien *et al.*[1] found that more than 80% of isolates from almost any part of the world had plasmid-borne penicillinase-mediated resistance to penicillin and ampicillin. They felt that this was probably the most nearly complete penetration of a species by one type of resistance gene. Prevalence of this resistance appeared to increase asymptomatically from 70% to 90% during the 1970s.[2]

In a survey of resistance in *S. aureus* isolated from patients suffering from nosocomial infections, we found that none of our isolates was susceptible to ampicillin,[3] which was in general agreement with results obtained in a multicentric study.[4]

However, in a rural centre supported by our Institute, penicillin was the only antibiotic available for general use and it was observed that patients treated with penicillin alone or in combination with local application of dyes resulted in skin infections being cured. We, therefore, undertook a study, in order to determine the bacterial aetiology of the skin infection and to determine the antimicrobial susceptibility of the pathogens isolated.

Eighty-four consecutive patients attending the rural clinic with skin infections (pyoderma) with pustular lesions and who had not received any treatment for the same were included in the study. The pus was swabbed on sterile swab sticks. These swabs were then rolled onto sterile filter paper using the 'no touch technique'. The filter paper was covered with a larger pre-sterilized butter paper which in turn was wrapped in an aluminium foil with the patient's particulars written on the top. These samples were stored in a plastic box and transported to the Department of Microbiology after 3 to 7 days. In the laboratory, the filter papers were placed on sheep blood agar plate and incubated for 4 hours at 35 °C after which the paper was placed onto the second half of the petri dish and incubated overnight.

All isolates were identified up to the species level using standard techniques and the antimicrobial susceptibility of *S. aureus* was determined using the NCCLS disc diffusion method. The susceptibility of 7 randomly selected isolates was also tested against 10 µl of aqueous suspension of 1% gentian violet, 1% malachite green and 1% auramine O dyes. All results were entered into the WHONET3 programme.

In 47 patients *S. aureus* was isolated as the major pathogen. In 3 patients group A *Streptococcus pyogenes* was also isolated. No bacteria was isolated in the rest of the samples. Table I shows the susceptiblity pattern of the *S. aureus* isolates.

Drug resistance is an increasing concern in modern medicine. Its consequences in terms of human misery are grave and the financial implications of its increasing incidence are substantial. It has been suggested that developing countries with fewer restrictions on antibiotic use may be in a situation of underuse and poor utilization compounded by self-prescription of over-the-counter drugs. However, developing countries differ from developed ones in that they have different environmental conditions, and infectious disease burden which may affect antibiotic use and the resistance pattern.

It is true that practitioners in tertiary care centres and other hospitals use antibiotics without any effective audit, either microbiology services are not available or where available are not necessarily used and relied upon for clinical decision-making. It is rare for a patient to be admitted to our hospital and not receive antibiotics. However, tertiary care hospitals, from where most of the antimicrobial data originate, do not represent the total infectious burden in the society. India continues to remain a largely rural country with more than 80% of the population living in small villages. The rural training centre at Ballabgarh, (40 km away from our hospital) is more likely to represent the resistance pattern of bacterial infections acquired in the community.

Therefore, we feel that resistance data emanating from tertiary care centres should not be used to make predictions for antibiotic policies in developing countries. We would also suggest that tertiary care centres must provide data from the community along with their nosocomial infection data so that the true prevalence of resistance could be ascertained and used for generating realistic guidelines for empirical use of antibiotics.

TABLE I. Susceptibility pattern of *Staphylococcus aureus* isolates

Antibiotic	Break points	No. of isolates	% R	%I	%S
Penicillin	S>29	47	0	0	100
Trimethoprim–sulphamethoxazole	11–15	47	34	0	66
Tetracycline	15–18	47	19	0	81
Gentamicin	13–14	47	0	0	100
Ciprofloxacin	16–20	47	0	0	100

25 August 1997

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Health services for India's urban poor

The Constitution of India recognizes health care as a basic human right. In the fiftieth anniversary of our independence, we need to address the issues of health care delivery in India.

History will judge India not by the organ transplants done nor the technological breakthroughs in medicine but by our health statistics.[1,2] As long as poverty-related medieval epidemics resurge or remain, our perinatal mortality figures are high and the childhood morbidity and disability figures continue to rise, any veneer of apparent prosperity and modern medical facilities (mostly in the private sector) in the cities cannot validate our claims to development in the health sector.

The number of hospitals (approximately 7000), allopathic dispensaries (over 15 000)[1] and centres of alternative medicine (innumerable) has grown rapidly but the health status of the population is far from satisfactory. Why? When India became independent, the rural population far outnumbered the urban. The health planners, therefore, rightly gave priority to rural health services. It was envisaged that the rural centres would be linked with major referral hospitals to ensure quality care. However, these hospitals were not equipped to even face the challenges of the changing socio-economic structure of the urban population. The large number of illiterate poor migrating to the cities for better prospects pay the price for social and economic inequality with their health. What has become glaringly evident is the absence of information on outreach programmes. Most services are beyond the reach of the poor especially in the urban slums and illiteracy aggravates the situation as the poor do not know how to avail of even the existing facilities. A study undertaken by the National Institute for Urban Affairs (NIUA)[3] showed that geographical proximity to a health centre does not necessarily correlate with the health status of the community and that a significant proportion of children in urban slums are ignored by the health system.

Though the services are free of cost in government hospitals, they are effectively 'out-of-reach hospitals' for several reasons—commuting long distances, inability to lose a day's wages (the working hours of health centres do not suit the working poor), and absence of a network of social services to arrange for reimbursement of medical expenses. The self-employed poor have no network of dispensaries or systems of referral or reimbursement and are, therefore, left to the mercy of general hospitals or poorly qualified private practitioners. In any case, hospitals are designed as centres for curative services leaving those with incurable, chronic health problems nowhere to go. For the disabled urban dweller, access to health care is an even greater problem.

The attitude of the policy planners towards the poor disabled is often one of apathy. (Can you think of one government hospital in India which has a ramp-route that wheelchair-users could use?) With curative services for medical emergencies also barely met, the common man today cannot hope for promotive health care services.

A change in the health status can happen only through effective health education by the media and interpersonal communication. To ease the burden on the health services, hospitals and health centres, it is essential to prepare a cadre of paramedics to advise and educate people about healthy lifestyles. Community health volunteers, in my opinion, hold the key to effective health services. This will also reduce the pressures on the beleaguered hospitals with an overworked staff. Funding the training of such paramedics should be a priority. We must act in this fiftieth year of independence to ensure 'Health-for-All'.

1 September 1997

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Chemical injury due to colours used at the festival of Holi

The festival of Holi involves throwing of dry/wet colours at each other. These colours occasionally enter the eye and damage the ocular surface causing temporary visual disability, immense ocular discomfort and complications threatening vision.

We examined 40 patients who presented to the casualty services of our tertiary care eye centre after sustaining injuries due to colours during Holi. The ocular evaluation comprised slit-lamp biomicroscopy, fluorescein staining of the cornea to detect epithelial defects, direct ophthalmoscopy, tonometry, visual acuity testing and refraction. Patients with pre-existing ocular diseases of the anterior segment of the eye were not included in the study. All patients were started on antibiotics, cycloplegics, non-steroidal anti-inflammatory drugs and immediate lavage of the ocular surface with distilled water.

The mean (SD) age of the patients was 18 (6) years with a range of 12–26 years. There were 35 males and 5 females.

While in 22 (55%) patients both eyes were affected, in 11 (27.5%) only the right eye and in 7 (17.5%) only the left eye was affected.

Thirteen patients were illiterate, 6 had been educated up to middle school, 10 up to high school, 7 were matriculates and 4 were graduates.

Thirty-four (85%) patients sustained injuries due to dry colours, while in 6 (15%) it was due to liquid colours. Twenty-six (65%) patients had colours thrown on them from a distance and 14 (35%) had them directly rubbed on to their face.

Ten (25%) patients reported for treatment within an hour of sustaining the injury, 22 (55%) sought medical help within 6 hours, while 8 (20%) came after 6 hours of the incident.

All patients complained of irritation, redness and watering. Photophobia occurred in 24 patients, pain in 16 and discoloration of the conjunctiva in 2.

TABLE I. Ocular signs following injury with colours

Ocular involvement	No. of patients (%)
Chemical conjunctivitis	38 (95)
Subconjunctival haemorrhage	3 (7.5)
Conjunctival staining	7 (17.5)
Corneal epithelial abrasion	15 (37.5)
Superficial punctate keratopathy	30 (75)
Corneal staining	3 (7.5)
Corneal ulcer	2 (5)

The ocular findings encountered are listed in Table I.

The best corrected binocular visual acuity ranged from 6/6 to 6/12 in 28 (70%) patients, 6/18 to 6/36 in 8 (20%) and less than 6/60 in 4 (10%).

The colours used during Holi have an alkaline base and the severity of ocular injury is related to the surface area of contact and the degree of penetration.[1] The degree of penetration determines the depth of the injury—corneal and conjunctival epithelium, basement membrane, stromal keratocytes, stromal nerve ending and the vascular endothelium.[2-5]

The hydroxyl ion of the alkali saponifies the fatty acid components of the cell membranes resulting in cell disruption and death. The cation is responsible for penetration of the alkali[6] and reacts with the carboxyl groups of the stromal collagen and glycosoaminoglycans, causing their hydration leading to loss of clarity of the corneal stroma.[7]

The clinical picture may be complicated by superadded infection, which may lead to irreversible loss of vision.

Immediate and copious lavage of the eye with running tap water is a must in all such injuries. If the ocular symptoms persist, an ophthalmologist must be consulted. However, primary prevention, through public health education, by curtailing the practice of applying colours on to the face will help in reducing ocular morbidity.

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4 September 1997

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