

Liquid laundry tablets a risk for alkali eye damage

Daithí Ó'hAnluain
in Dublin

NEW liquid tablet forms of laundry detergent pose a serious risk to children, say Irish doctors who are calling for clearer warnings and childproof packaging on the products following a series of serious chemical eye injuries.

Doctors from the Children's University Hospital (CUH) in Dublin discovered the problem when six children presented with alkali eye injuries in just six months, between July and December 2004.

"In children, perhaps we would normally get one case of chemical eye injury every six months, usually not severe," said Noel Horgan, specialist registrar at CUH at the time of the study and currently a Fellow at the Wills Eye Hospital in Philadelphia.

The six patients treated at the CUH presented with corneal epithelial defects ranging from 20% to 80% of the corneal surface area, with bilateral injuries in three patients, and significant conjunctival epithelial defects in four. All patients were admitted to hospital, and the duration of stay ranged from two to five days. All defects eventually re-epithelialised with apparently normal corneal epithelium.

"All of these patients had significant chemical abrasions of their ocular surfaces, and were hospitalised for intensive topical treatment, initially with hourly topical steroid around the clock, topical cycloplegia, and topical antibiotic drops. The treatment was tapered as the individual patient's ocular surfaces improved," said Dr Horgan.

The injuries were sustained when plastic packets containing 50ml of highly concentrated liquid alkali (pH 9) household detergent burst and sprayed the children with the contents. Normally the detergents are placed in the tumbler and disintegrate during the wash cycle. Dr Horgan said the cases could be described as a cluster.

Although the detergent packaging displays a warning that the contents are an irritant, and that the product should be kept out of the reach of children, consumers may not appreciate the real risk of injury posed, stressed Dr Horgan.

"I think these agents have been on the market for a while, and similar incidents have probably occurred previously, but have not been reported in the medical literature," said Dr Horgan, lead author of the report highlighting the danger, which appeared recently in the *Lancet*, (Vol 366,

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Product more dangerous than manufacturers suggest

When contacted by Dr Horgan and colleagues, the manufacturers responded that they continually review the safety of these products. Their 'risk assessment' grades these products as potentially causing 'transient irritation' in cases of eye-splash, similar to shampoo, for example.

"We would disagree with that assessment, and would recommend at least child-proof packaging for these products, and a more obvious warning label to highlight the risk of eye-injury, in particular in children," said Dr Horgan.

The cluster occurred as the result of a particular brand of detergent, but Dr Horgan said there are several brands of household liquid detergent in tablet form, and they all potentially pose a risk.

He explained that alkaline eye injuries occur more often in adults, usually related to plaster, lime, cement or industrial cleaning agents accidentally sprayed or splashed in the eyes. The severity of the injury relates to the pH and concentration of the substance involved, delay in irrigation/treatment, and whether the injury was unilateral or bilateral.

"These children had all undergone prompt irrigation at home by their parents, and also at presentation to the hospital, following application of topical local anaesthetic to the eyes. This is the most important first step, to remove the offending agent and prevent further damage," said Dr Horgan.

Alkaline agents damage the surface layers of the eye, in particular the stem cells of the cornea, which are needed to continually replenish the corneal epithelium. These in turn are essential for corneal clarity and clear vision. Such agents can also damage the goblet cells of the conjunctiva, which secrete the mucin layer of the tear film.

"Therefore, in a worst-case-scenario alkali injury, destruction of these cells can lead to a permanently abnormal ocular surface, scarred cornea, hazy, poor vision, in addition to fibrosis and scarring of the conjunctiva, which adds to the ocular surface scarring, and lack of normal tear film," said Dr Horgan.

Co-author Mr Ian Flitcroft, a consultant ophthalmologist at the CUH, and colleagues, will continue



Noel Horgan



Courtesy of Noel Horgan MD

to collect data on patients presenting with this type of injury, and will follow-up these patients in order to report any long-term sequelae.

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