## Flammability of paraffin-based products: a primary care survey and a need for product labelling

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The potential danger posed by the flammability of paraffin-based products has been highlighted by the National Patient Safety Agency (NPSA) in the UK.[1] Knowledge by patients of this risk was recently assessed in a hospital dermatology department setting by Al-Niaimi and Cox,[2] and methods that might increase knowledge were also assessed.

However, this study was specific to patients attending a hospital department, where warning posters and handouts would be available and most attendees would be expected to have relatively severe dermatoses. We therefore elected to further examine this issue in a primary care (general practice; GP) setting.

Two GP practices participated in the study. We specifically chose a practice that had its own dispensing department (dispensing practice) and a practice that prescribed using forms to be taken to a retail pharmacy (nondispensing practice), in case there were any differences between the two types of practice. The dispensing practice provided us with a list of names of all patients who were prescribed paraffin-containing products with > 50% paraffin content within the past 12 months. In total, 25 patients were identified and included. In the nondispensing practice, the database was searched for all patients who were prescribed similar products within the past 12 months and the first 25 patients were included.

Questionnaires were sent to all patients. The questions asked were the same as in the previous study,[2] to allow direct comparisons to be made. The most relevant responses are documented in Table 1. A prepaid envelope was provided, together with a detailed letter explaining the reason for the questionnaire. Initially, 36 patients returned all the questionnaires by mail, 9 returned them on a follow-up visit to their GP, and the remaining 5 patients were sent a reminder to which they all replied with the return of their completed questionnaires.

**Table 1** Patient suggestions for how best to convey knowledge of fire hazard of paraffin-based products.

| Which source(s) of information would be most useful?* | Patients, %† | |
|---|---|---|
| | Primary care | Hospital |
| Dermatology doctors/nurses | 35 | 60 |
| Warning label on product | 89 | 59 |
| GP practice doctors/nurses | 43 | 37 |
| Leaflet in dermatology departments | 22 | 26 |
| Pharmacist, leaflet or poster at pharmacy/dispensary | 41 | 25 |
| Poster at site of consultation | 39 | 18 |
| Leaflet at GP surgery | 33 | 17 |
| Patient support groups | 9 | 4 |

GP, general practitioner. *Multiple responses were allowed; †data from Al-Niaimi and Cox.[2]

The main difference from the hospital-based study was an even greater lack of awareness of the potential hazard of paraffin (58% in the hospital study, 39% at the dispensing practice, 9% at the nondispensing practice). This suggested that the dispensing practice was more efficient at explaining the warning, but in fact six of the nine patients who knew of the hazard did so because of 'common sense' or general education; three of these had been told by a GP or nurse and two by a pharmacist (multiple responses were allowed).

There were no differences between practices or between those who knew about the potential hazard in a series of options about how such information should best be conveyed to patients, so this information was aggregated and compared with the same questions previously asked of hospital patients[2] (Table 1). Predictably, more patients in this cohort felt that information at the GP surgery or information at a pharmacy would be helpful and fewer patients felt that information from dermatology nurses or departments would be helpful, compared with the previous group attending hospital departments. However, the overwhelming approach that nearly all patients felt it was important for products to be labelled with appropriate warnings.

The only documented risk of flammability is with products containing > 50% paraffin, but the NPSA warning applies to all products that contain paraffin. We support this as we are concerned that preparations containing < 50% paraffin may still carry a fire risk. The lack of documented risk, as highlighted in the NPSA report, does not exclude this risk, and it would indeed seem likely that paraffin components may remain on clothing and dressings even when the aqueous component has evaporated.

It seems clear from our surveys that most patients are not aware of the fire risk of paraffin-containing products, and that the single most effective way to convey this information (bearing in mind that most patients will be treated in primary care settings or may purchase emollients direct from pharmacies) is for products to carry a suitable worded warning and flammability hazard symbol. To date, this has not been recommended by the NPSA.

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**This report is dedicated to our late supervisor and colleague Professor Neil Cox, who sadly passed away at the final stages of preparation.*

 

## References

1 National Patient Safety Agency. Fire hazard with paraffin-based skin products. 2007. Available at: http://www.nrls.npsa.nhs.uk/resources/?entryid45=59876&q=0%C2%ACparaffin%C2%AC (accessed 12 April 2010).

2 Al-Niaimi F, Cox NH. Flammability of paraffin-based products; an under-recognized hazard, and methods to reduce it. *Br J Dermatol* 2010; **162**: 893. 95.


## Erosive pustular dermatosis and osteoradionecrosis: complications of radiotherapy

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A 70-year-old man presented to dermatology in 2003 with scalp ulceration. He had previously received radiotherapy to the left frontoparietal area on four occasions from 1986 to 1990 to treat a recurrent moderately high-grade T-cell lymphoma. From 1990 to 2003, plastic surgeons had managed areas of exposed skull that had never healed after the radiotherapy. The patient had undergone a left radial forearm flap in 1990, with burring of exposed bone on three occasions to encourage granulation. The surgical wound broke down to expose the skull. Granulation tissue was seen in multiple biopsy specimens.

On physical examination, the patient had extensive erosions, pustules and ulceration, with a purulent exudate of the left frontal scalp and an asymmetrical pulsatile depressed area (Fig. 1a). There was movement coincident with respiration and arterial pulses. The patient reported that the ulceration had deteriorated after sustaining a trauma to the head 6 years previously.

Skin swabs intermittently grew *Staphylococcus aureus*. Histological examination of a skin biopsy found a lymphoplasmacytic infiltrate in the dermis, and ectasia of dermal vessels with cellular fibrosis, findings consistent with radiation-induced changes. A skull X-ray showed lytic changes of the left frontal and parietal bone, consistent with previous surgery or radiotherapy. Based on the clinical appearance of sterile pustules, erosions and a purulent exudate, an additional diagnosis of erosive pustular dermatosis (EPD) was made. Treatment over 6 years included antiseptics, 3–6 week courses of mild to potent topical corticosteroids, 9 months of treatment with calcipotriol cream, and 1–3 week courses of oral flucloxacillin, with limited success. Topical calcineurin inhibitors were not used because of the intermittent infection, previous lymphoma and lack of skull beneath the ulceration. The erosions and ulcers never healed. In May 2008, a wing of bone 80 mm in length fell off the parietal area of the skull during a dressing change. Histological examination of the bone showed osteoradionecrosis (Fig. 1b-d). The patient repeatedly declined neurosurgery or other surgical intervention. In February 2009, he developed right-sided leg weakness due to a cerebral abscess, and died despite surgical treatment.

EPD is a rare, inflammatory condition often occurring after trauma, usually on the scalp.[1] Triggers include bruising, sunburn, shingles,[1] and surgery with skin grafting.[2] There are two case reports of EPD after radiotherapy.[3,4] The mean interval between onset of trauma and presentation of EPD was 12 months in one case series (range 1–55 months).[1] The radiation-induced cases occurred after 25 days in one case (total dose 5000 cGy) and 4 months after treatment in the second (total 89 600 cGy). Radionecrosis and skin tolerance of radiotherapy is usually 5000 cGy.[5] Our patient received doses at overlap sites of 9000 cGy.

Histological changes in EPD are nonspecific but include inflammatory changes in the epidermis and dermis, ulceration, atrophy or hyperkeratosis, and reduced or absent hair follicles. There is no correlation between disease severity and colonization by *S. aureus*. Antimicrobial treatment does not consistently clear disease.[1] Reported treatments for EPD include potent topical corticosteroids and topical tacrolimus.[2] In this case, the previous lymphoma, repeated secondary infection, and severe radionecrosis with absent bone resulting in close proximity between the brain and the ulcerated skin limited the therapeutic options.

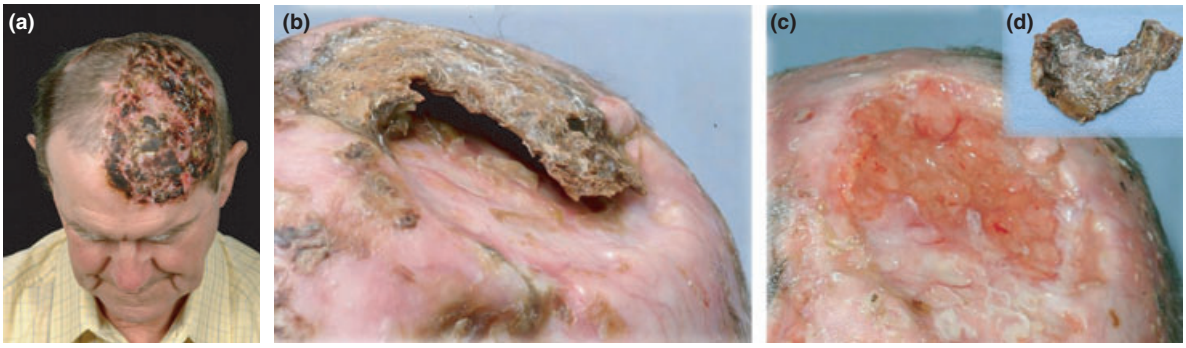


**Figure 1** (a) Ulceration to the scalp consistent with erosive pustular dermatosis; (b) skin formed underneath the osteoradionecrotic skull, which (c and d) later became detached from the patient's head.