Aluminium-containing transdermal patches: a risk of burns

- The waterproof outer layer protecting some transdermal patches is composed of aluminium. This creates a risk of burns, especially when the patient is exposed to electric shocks or intense magnetic fields.

- External electrical shocks delivered by a defibrillator for example can create electrical arcing between the electrode and the aluminium layer of the patch, potentially causing burns.

- During Magnetic Resonance Imaging (MRI) the aluminium present in these patches, which is not ferromagnetic, creates electrical resistance (by induction), and can sometimes cause second-degree burns.

- Patients undergoing MRI or defibrillation should first be examined for patches containing aluminium. Such patches can generally be identified by examining the backing, which is shiny and reflects light if aluminium is present.

- If in doubt it is best to temporarily remove all transdermal patches before MRI or external defibrillation.

- Packaging of transdermal patches that contain conductive materials should include more explicit warnings.

*In these cases, however, experiments showed that the explosive phenomena were due to the conductive nature of the excipient (1,2). They were caused by electrical arcing between the paddle of the external defibrillator and the aluminium layer of the patch (1-3). The warning on Nitriderm TTS® patch leaflets, which contain trinitrine, makes sense. However, there is no need to extend the same warning to patches without an aluminium layer since trinitrine is not implicated, as the phenomenon is electrical, not chemical.

**Caution needed to prevent burns.** Several ranges of transdermal patches containing a protective aluminium layer are marketed in France, including Nitriderm TTS® (trinitrine), Scopoderm TTS® (scopolamine), and Neuprol® (rotigotine) (b).

- Unless one is sure that a transdermal patch does not contain conductive material, it is best to remove it before MRI and, if circumstances allow, before external defibrillation (8-12). The patch should then be reapplied or replaced, according to the basic rules for handling patches (especially handwashing and disposal) (13-15).

- The presence of an aluminium layer is not clearly mentioned on the labeling, but it can generally be detected simply by examining the adhesive surface: if it is shiny and reflects light, the patch contains an aluminium layer.

**Action.** Transdermal patches containing conductive materials such as aluminium require special precautions compared to patches not containing these materials (16).

It may not be easy to remember this in emergency situations; patients and caregivers would therefore benefit from a clear printed warning.

**Selected references from Prescrire’s literature search.**

4- Prescrire Rédaction “Gare aux objets métalliques au voisinage d’un appareil d’IRM” Rev Prescrire 2002; 22 (233): 753.
7- Price R “MRI imaging safety considerations” Radiographics 1999; 19: 1641-1631.