

## [NM-297] Second Degree Burns After MRI

Bhattacharya S

Mgh , Swampscott , MA, USA

---

A 76 kg autistic teenager underwent a MRI of his brain and entire spine under general anesthesia. The MRI was conducted in a 3 Tesla (Siemens Magnetom Trio) and lasted for two and a half hours.

The ECG monitor used was MEDRAD Veris( Model 8600)Fig 1. At the end of imaging, an unusual redness was noticed on removal of the ECG leads. Blisters were noticed 30 minutes later in recovery when patient started complaining of itching at the site. He was diagnosed with second degree burns and treated accordingly. Pictures were taken on the day and a week after the incident.(figures 2 &3)

The heating mechanism responsible for burns in a MRI are

1. Electromagnetic induction heating
2. Heating in a resonant circuit
3. Heating due to a antenna effect

Burns associated with ECG monitoring can be attributed to

1. Formation of a loop in the ECG cable
2. Cable in close proximity to the inner surface of MRI bore
3. Electrode characteristics - allergic reactions ,dry gel, improper contact with the skin, radiofrequency(RF) heating of the gel
4. Large patients
5. High power radiofrequency investigation requirement
6. Imaging of lumbar spine

In our patient, we presume some of the above factors may have played a role. Even when using MRI compatible monitoring system, attention has to be given to position of the cables (no loops), avoiding contact with skin and appropriate thermal insulation (between patient and RF coils).

### References

1. Hardy PT, Weil KM. A review of thermal MR injuries. Radiology Technology 2010;81(6):606-609.
2. Dempsey MF, Condon B. Thermal injuries associated with MRI. Clin Radiol 2001;56(6):457-465.

MEDRAD ECG MONITOR





Day 1



Day 7

