

# Erythema Ab Igne in the Palmar Area Induced by Smart Phone: Case Report

## Akıllı Telefon Kullanımına Bağlı Palmar Bölgede Eritem Ab İgne

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**ABSTRACT** Erythema ab igne (EAI) is a reticular, telangiectatic, pigmented dermatosis resulting from chronic exposure to heat that is insufficient to cause a burn. Clinically, EAI is diagnosed based on the distinctive cutaneous changes and overlapping distribution with thermal source exposure. The type of heat source causing EAI has historically shown a parallel change to technological progress. Historically EAI was commonly seen on the individuals working in front of coal stoves or sitting close to a fireplace whereas repeated application of heating pads, electrical blankets were common in recent past. Since the beginning of 21<sup>st</sup> century, reports of laptop induced EAI have increased. Nowadays, smart-phones take the place of laptop computers and are widely used. To the best of our literature search, there is no report of EAI induced by smart phones. Here, we report a case of EAI in the left palmar area of a 21 years old female patient for the first time. We suggest that the extended use of smart-phones might be considered as an unpredicted cause of EAI.

**Key Words:** Erythema; hyperpigmentation

**ÖZET** Eritema ab igne (EAI) yanık oluşturmayacak şiddette ısıya uzun süre maruz kalma sonucu gelişen retikuler telenjektatik pigmente bir dermatozdur. EAI tanısı klinik olarak tipik deri bulgularının ve ısıya maruz kalan bölgenin örtüşmesi ile konulur. EAI'ya neden olan ısı kaynakları tarihsel gelişmelere de paralel olarak değişim göstermiştir. Önceleri EAI sıklıkla kömür sobası veya şömine önünde oturanlarda görülürken, yakın zamanda ısıtıcılar ve elektrikli battaniyelere bağlı görülmeye başlanmıştır. Yirmi birinci yüzyılın başından beri, dizüstü bilgisayarlarla bağlı EAI bildirimleri artmıştır. Günümüzde ise, akıllı telefonlar dizüstü bilgisayarların yerini almakta ve çok yaygın kullanılmaktadır. Literatürde akıllı telefonlara bağlı EAI bildirisi bulunmamaktadır. Burada, 21 yaşındaki kadın olguda sol el palmar bölgede akıllı telefon kullanımına bağlı gelişen EAI ilk kez bildirilmektedir. Uzun süreler boyunca akıllı telefon kullanımı da EAI'nın öngörülemeyen bir nedeni olarak akılda tutulmalıdır.

**Anahtar Kelimeler:** Eritem; hiperpigmentasyon

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**E**rythema ab igne (EAI) is a reticular, telangiectatic, pigmented dermatosis resulting from chronic exposure to heat that is insufficient to cause a burn.<sup>1</sup> Clinically, EAI is diagnosed based on the distinctive cutaneous changes and overlapping distribution with thermal source exposure. The type of heat source causing EAI has historically shown a parallel change to technological progress. Historically EAI was commonly seen on the individuals working in front of coal stoves or sitting close to a fireplace whereas repeated application of heating pads, electrical blankets were com-

mon in recent past. Since the beginning of 21<sup>st</sup> century, reports of laptop induced EAI have increased.<sup>1-3</sup> Nowadays, smart-phones take the place of laptop computers and are widely used. To the best of our literature search, there is no report of EAI induced by smart phones.

## CASE REPORT

A 21-year-old female patient admitted to outpatient clinic with the complaint of change in color in her left palm. She stated that the lesion was asymptomatic and was primarily noticed by her friends 2 months ago. Thinking that it might be dyed externally and unintentionally, she used soaps and bleach but it did not change. She was otherwise healthy and does not use any medications. Physical examination demonstrated a reticulated pattern of hyperpigmented lesions on the thenar, hypothenar parts of the left palmar area (Figure 1). As the clinical appearance was compatible with diagnosis of erythema ab igne, she was questioned in detail in order to clarify the reason. She reported that she only used her smart phone with left hand for prolonged periods of time (approximately continuous 4-5 hours everynight), even with the power cable connected to the electricity. In addition, she also reported a notice of warming of the device from time to time but continued to use as she did not considered the situation to be dangerous. With the history, overlapping positioning of the phone contact with the lesions and the clinical appearance, the diagnosis of erythema ab igne was confirmed.

## DISCUSSION

The penetration of smart phones in daily life have significantly changed the lifestyle and have become an inseparable part of our lives. Many people, especially the youth, use these technologies on a daily basis and for various purposes. Young persons use these devices to study, to search for information on the internet, to play games and to communicate with others.<sup>4</sup> This multi-purpose use extends the time of use, hence the contact with the device. Although mobile phones bring lots of benefits to their users, they may cause some unpredicted health problems related with personal style of use. The most common



**FIGURE 1:** Hyperpigmented and reticulated lesions on the thenar, hypothenar parts of the left palmar area.

problems related with prolonged use of phones are reported to be insomnia, stress, anxiety, addiction, depression, and postural problems.<sup>5</sup> In particular to skin, there are some dermatological side effects of mobile phones. Allergic contact dermatitis with nickel and chromate have been reported. In these reports, it is emphasized that “the prolonged contact” induces the reaction, as the cell phone material reacts with human sweat to become a contact allergen causing contact dermatitis.<sup>6-8</sup> In our patient also “the prolonged contact” was the main reason which induces the erythema and pigmentation as well. It is reported that during prolonged use of mobile phones, individuals feel a burning sensation in their auricles which might be associated with warming of the device.<sup>9</sup> Also in a study by Kapdi et al. the health hazards of electromagnetic radiation exposure in terms of thermal effects from mobile phones was emphasized.<sup>10</sup> During playing games, watching videos or texting the phone is held in the left palm facing up the screen and allowed for the right-hand swiping. The demarcation of the lesions of our patient was on the left palmar area and corresponded to the zone that contacts with the phone. We think that the back part of the phone heats, but the user enjoys the time, continues to use and this long contact with a heated device results in erythema ab igne.

Treatment of EAI primarily consists of discontinuing use of the heat source.<sup>1,2</sup> Our patient willingly agreed to avoid the contact as she was convinced and quite satisfied with the diagnosis. However, patients with EAI continue to carry the risk for cutaneous malignant conditions for many decades. Squamous-cell carcinoma and Merkel-cell

carcinoma also has been reported in association with EAI.<sup>11</sup> So our patient's follow-up plan is scheduled as well. To our knowledge, this is the first report of erythema ab igne related with mobile phone use. We suggest that clinicians should be vigilant of the technological developments, their unexpected or inappropriate use and so, their impact on human health.

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