

# ***EPILEPSY AND FULL- THICKNESS BURNS***

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- *Epilepsy is a severe neurological disorder of brain function which may begin in early life and may leave such patients with a high invalidity. Idiopathic epilepsy occurs with no involvement of the brain structure and has two major aspects:*
- *- generalized epilepsy (also known as “grand mal”) or major seizure with the characteristic onset and the tonic-clonic convulsive movements;*
- *- the “absence” attack (also known as “petit mal” seizure) which affects children especially, also having a characteristic aspect.*
- *When the brain structure is damaged by different factors (such as trauma and tumors) the seizure attack usually has the form of partial epilepsy (also known as focal or symptomatic) such as the temporal lobe epilepsy and the Jacksonian motor seizure.*
- *During seizure attacks patients may suffer severe trauma such as limb fractures, head and neck injuries and occasionally even deep burns. The most famous description of a seizure attack with respect to such accidents, is the case of the epileptic young man from The New Testament (Mathew 17:14-15, Luke 9:37-40) who “often falls into the fire or into the water” ... ”he suddenly screams, it throws him into convulsions so that he foams at the mouth” ....*
- *The most part of burns occur in epileptic patients during major seizures but some may affect those with “absence” and partial epilepsy, due to the contact with overheated objects either by overturning receptacles with hot liquids. Such burns and scalds are always full-thickness with different TBSA, requiring admission in a Burn Unit. The most affected body areas are the face and anterior neck, the upper limb, the trunk and the lower limb. Further will be detailed three cases with deep burns occurred to patients with different seizure forms (the term “deep burns” is intended to mean full-thickness burns which always require skin grafting).*

- **1). Deep scald by boiling water to the abdomen, external genitalia and anterior aspect of both thighs:** the 55 year old patient heavy smoker and with significant alcohol addiction had short period of unconsciousness (during which he often fell down) from several years, but he thought that all his symptoms are the result of alcohol and smoking abuse and so he didn't ask his family doctor for a medical evaluation and treatment. One day when he was carrying a great pot with boiling water he had a sudden attack falling down and overturning the hot liquid on his abdomen, external genitalia and thighs, suffering a deep scald of about 20% TBSA. Despite the severe accident, he came to the Burn Unit after about three weeks (he has been treated at home during all this period by his family GP, an old practitioner who didn't realize the gravity of the accident – fortunately he used silver sulphadiazine to cover the burn wound).



- *Figure 1: the image of above shows the burn wounds at the admission (dark brown adherent dry eschars which slightly detach on edges and have a massive staphylococcal infection with characteristic odor).*



- *Figure 2: an immediate tangential excision has been performed, preserving the adherent deep layer of the burn eschars (the so called “incomplete tangential excision”), thus avoiding excessive bleeding which may complicate the “regular” procedure; the most part of the eschars have been removed in this way and the remaining slough has been debrided after that, by successive PUR foam dressings.*



- *Figure 3: on behalf of PUR foam dressings all scabs and infected wounds became very clean and covered with a healthy granulation tissue, as one can see in the image of above.*



- *Figure 4: this photo shows the wound aspect in the operating room, before skin grafting, revealing a very good granular bed which has been obtained by successive dressings with the before mentioned PUR foam.*



- *Figure 5: the granular areas from the previous image had to be covered by meshed STSG (which have been harvested with a Watson-Thackray skin graft knife and meshed with a Nr.20 scalpel blade).*



- *Figure 6: ten days about after grafting a full take of grafts can be seen as well as the good spontaneous epithelialization of donor sites*

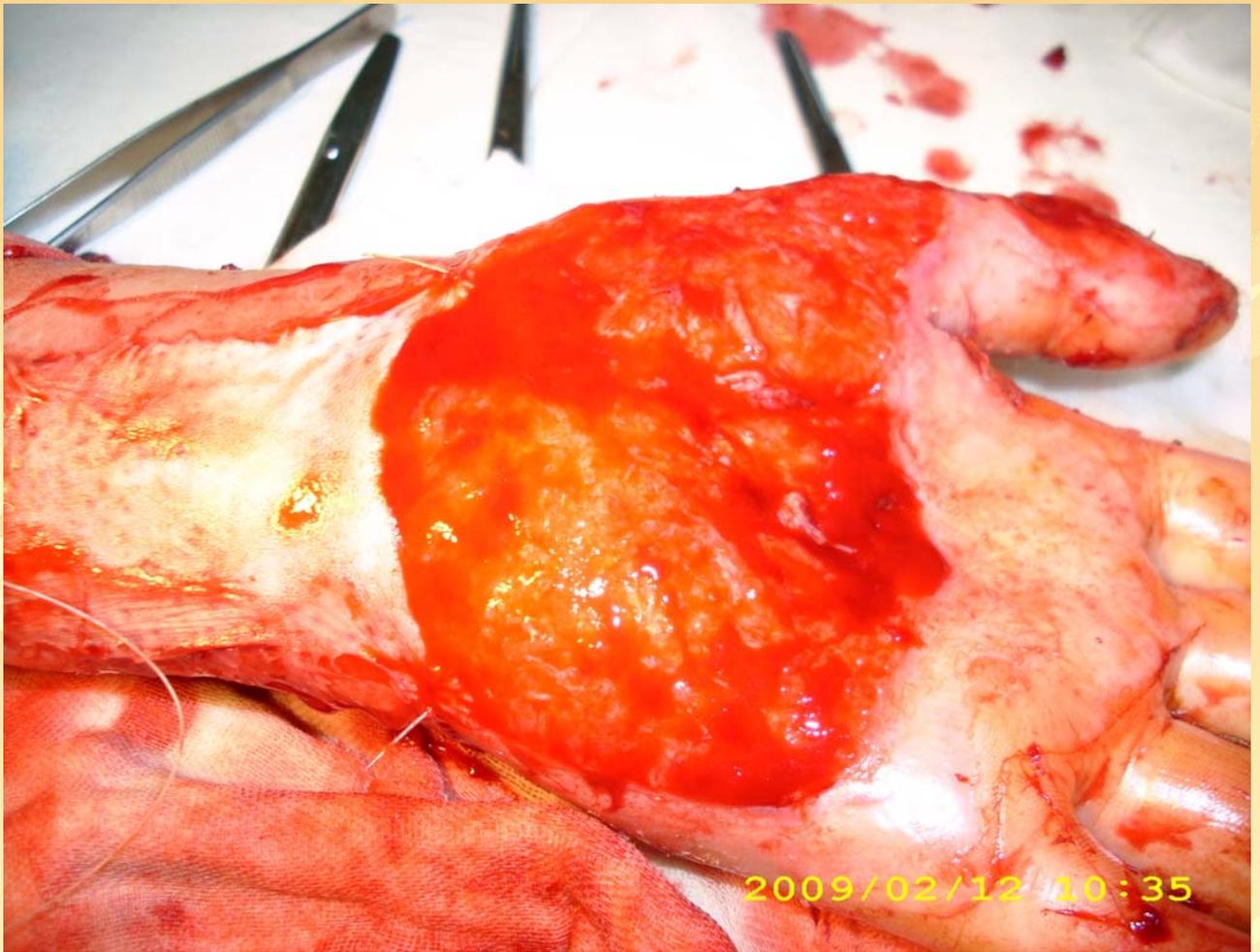


- *Figure 7: 3 weeks after skin grafting, all grafts are very well integrated and donor sites have completely healed; this patient came in the office only once, at about 2 months from the skin cover, after that he appeared no more for follow-up and scar management.*

- **2). Deep upper limb contact burn by overheated metallic surface:** *this lesion occurred to a 73 year old patient with periodical seizure attacks of “absence”. During such moments of “petit mal”, the patient has no convulsive movements like in the generalized form of epilepsy, but he/she is completely “absent” (not unconscious), immobile, anesthetic and underactive; when seizure stops (the attack can last from seconds to minutes), a period of complete amnesia, disorientation and sleepiness follows. The above mentioned patient had such periodical attacks of “absence”, despite the good neurological follow-up and treatment; during a seizure she put her left hand on the overheated kitchen range, suffering full-thickness burns on the volar aspect of fingers, palm and the lower third of the left forearm. She couldn’t tell how long she stayed in that position and not the circumstances in which the seizure appeared, and she have been brought by her daughter to the burn unit, but she refused to be admitted and operated. She has been initially treated in the office for about 5-6 weeks, where the full-thickness burns have been debrided (passive debridement) by the same Ligasano PUR foam dressings (as for the previous case), which have been alternated with conventional dressings with silver sulphadiazine and PVP-iodine cream and ointment, until a good granular bed has been obtained (when she eventually accepted to be admitted and operated).*



- *Figure 8: initial aspect of the full-thickness contact burn (hot kitchen range); one can see the discolored, dry, thick, waxy burn eschars from the volar aspect of fingers, palm and lower third of the left forearm.*



- *Figure 9: in the operating room just before skin grafting, a very good granular bed can be seen (this is also due to the permanent use of Ligasano PUR foam dressings); a skin graft (unmeshed STSG) has already been placed on the lower third of the left forearm.*



- *Figure 10: a five week postoperative follow-up reveals the aspect from the image of above, with full take and good integration of grafts and an acceptable function corresponding to the age and the injury of this patient; despite the fact that finger burns have not been grafted, a very good spontaneous healing occurred.*



- *Figure 11: a 4 months follow-up shows good result and an acceptable function despite the star-shaped palmary scar band (for which the patient had a flat refusal concerning the possible surgical repair, telling the plastic surgeon she is very happy with present result).*

- *The contact with an overheated surface is the most frequent way in which a deep burn may occur in epileptic patients, but there are other many cases when such patients have put their hands into pans with hot cooking oil, into burning stoves, hot driers and other heated devices, suffering different mangle injuries leading to amputations of fingers, hand and even forearm.*

- ***3). Right hemi facial deep burn in 31 year old patient with frequent generalized seizure attacks: deep facial and anterior neck burns following the contact with hot surfaces (metallic either ceramics) are the most severe and devastating lesions and with the most dramatic functional and physiognomic overtones; such injuries may affect the palpebral area and the eyeball with major consequence for the normal sight (loss of the injured eye). According to our statistics of the last 20 years, over 66% of the epileptic patients with deep facial burns have lost the injured eyeball. Further detailed is the case of 31 year old patient with frequent major seizure attacks (2-3/week) despite the correct neurologic treatment. During one of her seizures, she fell with the right half of her face, on the hot door of the stove from her room, suffering full-thickness burns, due to the contact with the overheated metallic surface.***



- *Figure 12: initial aspect of the full-thickness contact burns of the right hemi facial area, with dry, waxy, dehydrated eschars involving the forehead, the nose, eyelids, right cheek and the right half of the upper lip.*



- ***Figure 13: the burn wounds are debrided (autolysis passive debridement) alternating PUR foam dressings and Silver Sulphadiazine, and in this way the thick eschars is progressively removed and replaced by a good granular bed; usually we do not use sharp debridement for facial full-thickness burns (preferring passive debridement) because all viable healthy tissues have to be preserved carefully; early complete facial excisions of the burn wounds may remove healthy structures leaving eventually inconspicuous ugly scars very difficult to repair.***



- *Figure 14: following this procedure mentioned above, a very good granular bed has been obtained in about three weeks.*



- ***Figure 15: the remaining defect from the previous image has been covered by unmeshed thick STSG; the image from above shows the aspect at about 8-10 days after grafting (all grafts have “taken” very well, with a superficial epidermolysis which is quiet normal under a “tie-over” dressing).***



- *Figure 16: the image from above shows the patient's aspect after 6 months from the skin cover, with grafts very well "integrated" but with palpebral scars as well ( lower eyelid ectropion and intern epicanthi due to the thick scar bands).*



- *Figure 17: the inner canthal fold and scar contracture of the upper eyelid are released by a “Z” plasty and the ectropion of the lower eyelid is excised and the skin defect is covered with FTSG harvested from the right iliac fossa; we prefer this area as donor site for FTSG (instead of the classic retro-auricular skin) because such grafts retract less and provide a more long-lasting result*



- *Figure 18: the graft from the previous image is then covered by a “tie-over” dressing which is removed 7-9 days after; one can see the “Z” plasty (with 45° angles) by which the ciliary margin of the upper eyelid has been aligned.*



- *Figure 19: a follow-up after two weeks from the operation shows a complete palpebral occlusion, normal position and orientation of the eyelashes and acceptable dimension of the right eyelid opening.*



- *Figure 20: the same good result can be seen in the above image with ectropion release and correction of post-burn inner canthal fold.*



- ***Figure 21: this last image underlines once again the good aspect of the eyelids (good occlusion and acceptable symmetry); there is no doubt this patient will need other reconstructive procedure following the evolution of the scar process, but at least for this moment, there are no major physiognomic changes which may have a strong psycho-social impact.***

- **Conclusions:** *in this topic we tried to emphasize the severity of burns in epileptic patients, despite the fact that such injuries are not very common (10-15% according to our last 20 years statistics). Facial burns and burns of the upper limb are the most frequent, followed by injuries of the trunk and the lower limb. All these burns are full-thickness due to the long contact with the burning agent during the seizure attack. Beside this, epileptic patients are very difficult people; they do not coop with the medical team and do not accept the multiple surgical reconstructive procedures. On the other hand, there is a negative impact of the association between the neurologic disease and the burn injury as well as the long in-patient period in a burn unit; all these aspects usually require a new strong anticonvulsive treatment scheme and a permanent neurologic follow-up. For the same reasons, the passive debridement (using for instance the PUR foam dressings) is considered a better option than the early excision and grafting (even though the last one is shortening the in-patient period). The great risk of general anesthesia for such patients and the long-lasting neurologic effects of anesthetic drugs in epileptics, avoid in many cases the aggressive surgery. Beside this, there is no evidence of benefits of early excision and grafting regardless the scar evolution; more over in facial burns, the early excision always removes healthy tissues in the same time with the burn eschars, with negative impact on the final result. Unfortunately many epileptics with facial burns remain with major physiognomic distortions, loss of one eyeball and so on, all these sequelae having enormous psychological, social and professional consequences.*
- *So, the best way to deal with such patients is to prevent them from every contact with boiling liquids, overheated objects and other sources of thermal energy either at work and in the domestic area especially.*
- **Bibliography:**
- *1).Oxford Concise Medical Dictionary, Oxford University Press, Fourth Edition 1994Holy Bible, The New Testament, TBS London 2003, 30-31,111.*
- *2). The Holy Bible, The New Testament, TBS London 2003, 30-31,111*



■ *Thank you very much for your attention.*