

Special Article

## Pain and Anxiety in Burn Patients

**Sevgi Deniz, MSc**

Research assistant, Cukurova University, Faculty of Health Sciences, Surgical Nursing Department, Adana, Turkey

**Sevban Arslan, PhD**

Associate Professor, Cukurova University, Faculty of Health Sciences, Surgical Nursing Department, Adana, Turkey

**Correspondence:** Sevgi Deniz, Research assistant, Health Science Faculty, Surgical Nursing Department, Balcalı Campus, 01330, Adana, Turkey, E-mail address: sevgidenizcu@gmail.com

### Abstract

Burn injuries that occur quite commonly worldwide are an important health problem that has social and economic dimensions and adversely influences lives of individuals and families. Burns are a special type of trauma that occurs when the organism is locally exposed to hot liquids and active matters in excess. In our country, around 15 thousand patients are treated in burn units each year and a significant proportion of these patients experience intense and long-term pain. While the burn pain is initially related to size and degree of the injury, later on treatment methods, possible infections, rehabilitation practices and psychosocial environment the patient is in also become additional important factors on the pain. The patients' experiences of pain and related expectation for pain cause anxiety for patients at different levels and create a vicious cycle between anxiety and pain. A literature review reveals that pain and anxiety are defined as two inseparable reactions or phases of the same phenomenon that is triggered by tissue damage. In his study Karateke (2010) states that there is a relation between burn patients' pain and anxiety levels. In this regards, it is important to consider patients' pain and anxiety as a whole. Insufficient evaluations of pain and anxiety can adversely affect healing and rehabilitation processes of the burn patients. It is recommended that health professionals who provide service for burn patients achieve optimal pain control and anxiety level reduction.

**Key words:** Burns; pain; anxiety.

### Introduction

Burn injuries which continue to be an important health problem in our country, are a special trauma type that occur when skin layers or organs opening outside of the body are exposed to factors such as high heat, chemical substances, electric current and radiation as a result of lack of attention and education, home and industry accidents (Yavuz, 2014; Yorgancı & Gelecek Geyik, 2007).

Each year around 50.000 people consult emergency services of hospitals in the United States of America due to burn injuries. While the exact number is not known in our country, it is estimated to be around 200.000. 15.000 of these cases receive in-hospital treatment and various processes such as medical dressing, hydrotherapy, physiotherapy, surgical debridement, grafting, fasciotomy and escharotomy are applied (Guloglu & Aksoy,

2007; Burn Incidence and Treatment in the United States, 2016). These processes applied in order to increase the quality of the care provided for the patients result in serious pain. Repetition of these processes with intervals and patients' knowledge about the process causes anxiety. Wall defines pain and anxiety as two inseparable reactions or phases of the same phenomenon that is triggered by tissue damage (Fakhar, Rafii & Orak, 2013). Since pain and inability to control anxiety would affect recovery of the patient adversely, providing optimal pain control and reducing anxiety level are recommended.

### Mechanisms, Characteristics and Stages of Burn Pain

In addition to being an intense and long-lasting pain, burn pain is also defined as the worst pain experienced by the patients (Kursun, 2007). While the burn pain is initially related to size and degree of the injury, later on treatment methods,

possible infections, rehabilitation practices and psychosocial environment of the patient also become additional important factors on the pain (Talu, 2007; Cimen & Erdine, 2007).

Several neural and chemical mechanisms are thought to create pain in burn injuries. The reason for the feeling of pain following the burn injuries is the response of nociceptors in the skin to heat (thermoceptor), mechanic distortion (mechanoreceptor) and both exogenous (chemical burn) and endogenous (polymodal receptor) chemical stimulants. The pain stimulus created that way is then transferred to dorsal root with both myelinated A delta (20%) and non-myelinated C axons. Painful stimulant creates network both at the level of dorsal root and upper centres (reticular track, thalamus) and becomes carried to cortex in a complex state causing the feeling of pain in peripheral and central mechanisms (Akinci & Basel, 2011; Erdine, 2007).

While the depth of burn is directly related with the intensity of the pain in burns, clinical classification based on depth and width of the wound may not always be an indicator in evaluation of the pain. Theoretically it is stated that the pain is more intense for partial thickness burns (first and second degree) as a result of stimulation of nerve endings whereas usually there is no pain or there is restraining, oppressive type of pain that is felt as a result of oedemas in neighbouring tissue for full thickness burns (third and fourth degree). Such a statement may not be always true based on various factors. The burn injury as a whole would not be in full thickness and definitely different degrees of burns occur. In addition, in line with the treatment nerve endings would develop again in granulation tissue and the pain would be perceived with sensorial transfer (Akinci & Basel, 2011; Kabalak, 2012).

Another reason for pain in burn injuries is the inflammatory response of the burn injury which includes chemical mediators such as histamine, bradykinin and prostaglandin that are released soon after the injury. These mediator cause pain at the point of injury and around it (Kabalak, 2012; Castana et al., 2009; Gregoretti et al., 2008).

Burn pain occurs acutely following the injury, continues during treatment process and under certain conditions it may even become chronic pain (Talu, 2007; Eti Aslan, 2014; Papaioannou

et al., 2016; Gauffin et al., 2016). Literature review reveals that the burn patients experience pain in various dynamics during the treatment process (Boluda et al., 2016; Shen et al., 2017). General characteristics of burn injury are a continuous basal pain with mild-middle intensity that is felt due to factors such as tissue injury and related changes in the general condition. In addition to basal pain, medical procedure related pains also occur during treatment such as grafting, medical dressing. Moreover, short-term intense 'breakthrough' pains occur as a result of stimulations such as movement and touch with the effect of a sensitive peripheral and central nerves system (Akinci & Basel, 2011; Hanafiah, Potparic & Fernandez, 2008; McQuillan, Makic & Whalen, 2009).

In the study conducted by Boluda et al. (2016) on serious burn patients, it was indicated that the patients experience the pain in various dynamics until they are discharged and they felt the pain most often while medical dressing is being replaced (Boluda et al., 2016).

### **Factors Affecting Pain Perception**

While the sources that determine the intensity of pain for the burn patients are not understood completely, medical, social and psychological factors affecting perception of the pain are discussed (Kursun, 2007).

- **Medical factors:** It is known that factors such as depth, width and localisation of the burn affect the intensity of the burn pain (Kursun, 2007; Billings, 2007).
- **Social factors:** It is stated that intensity of pain varies based on age, gender, ethnic root, education, profession and socioeconomic status for burn patients.
- **Psychological factors:** Factors such as previous experiences (injury, pain), current condition (treatment process) and anxiety related to concerns for the future (life time, physical deterioration, loss of independence and so on), pain expectation, condition of the wound and the need to stay at the hospital significantly affect the pain (Cimen & Erdine, 2007; Kursun, 2007).

Literature points out that fatigue and sleep deprivation significantly affect the pain experience. Many studies indicate that many factors result in deterioration of the ability to fall in sleep or stay asleep and thus increase fatigue which in return increases the intensity level of the

pain (Gauffin et al., 2016; Smith et al., 2008; Raymond, Ancoli-Israel & Choinière, 2004; Baartmans et al., 2016). Other factors increasing the level of pain may be listed as fear, anxiety, depression, being in a unfamiliar environment, concerns regarding family, loss of job and prestige, itching, medication used during treatment.

### **Anxiety in Burn Patients**

Burn injuries are a complex phenomenon that has adverse biological, emotional, mental and social effects on individuals. In addition to factors such as intensity of pain and duration of hospital stay, other factors such as age, gender, personal characteristics, life experiences result in various emotional reactions, but many studies indicate that one of the most common problems is anxiety for burn patients (Bunevicius et al., 2007; Kutlu et al., 2016; Arif & Ramprasad, 2013; Alvi, Assad & Malik, 2008). The study conducted by Alvi et al. (2008) on burn patients found that following the burn 82% of the patients have anxiety and 58% have depression (Alvi, Assad & Malik, 2008).

Anxiety is a psychological response for an unknown internal danger or threat. It can also be defined as a state of abnormal, groundless nervousness and fear that is accompanied by somatic symptoms (American Psychiatric Association, 2013). Symptom during anxiety vary based on people and may be different. Physiological symptoms may be listed as tachycardia, difficulty in inhaling, rapid inhaling, shivering of hands and feet, excessive sweating and psychological symptoms as distress, agitation, feeling like something bad will happen suddenly and fear (Karamustafalıoğlu & Yumrukcal, 2011).

Anxiety experienced by burn patients during this period is thought to be stemming from ineffective pain control, feeling of itching, deterioration of body integrity, loss of functions, hospitalization and fear regarding the surrounding. In addition, personality, lack of social support systems, applied interventions and the idea of losing independence are the factors increasing the feeling of anxiety (Pazar, İyigün & Sahin, 2016; Loncar, Bras & Mickovic, 2006).

In cases when the burn patients are not treated for anxiety, they encounter problems such as fear, sleep deprivation, depression and helplessness. This makes it difficult for patients to cope with

their illness and complicates the treatment (Fakhar, Rafii & Orak, 2013). Therefore, it is important to evaluate level of anxiety for burn patients and control it in a short time.

### **Role of Nurses in Pain and Anxiety Control of Burn Patients**

It is known that anxiety increases the perception of pain and the pain results in anxiety. 30% of the pain patients experience panic disorder, common anxiety disorder (Cam Celikel, 2003). Wall defines pain and anxiety as two inseparable reactions or phases of the same phenomenon that is triggered by tissue damage.

Daily procedures of burn patients result in serious pain (Park, Oh & Kim, 2013). The patients' experiences of pain and related expectation for pain cause anxiety for patients at different levels and create a vicious cycle between anxiety and pain.

The studies point out that there is a mutual relation between patients' level of pain and anxiety (Park, Oh & Kim, 2013; Fakhar, Rafii & Orak, 2013; Hsu, Chen & Hsieh, 2016; Seyyed-Rasooli et al., 2016). The study conducted by Karateke (2010) indicated that the burn patients that experience intense pain should also be considered in terms of anxiety level (Karateke, 2010).

In this context, it is important to approach pain and anxiety of patients as a whole. Since insufficient evaluations of pain and anxiety can adversely affect healing and rehabilitation processes of the burn patients, the nurses who are members of multidisciplinary burn team should help patients achieve optimal pain control and anxiety level reduction.

### **Conclusion**

Despite important improvements in care and treatment of burn injuries, it continues to be a life-threatening problem. Additionally, as a result of long stays at the hospital and applied processes in order to increase the quality of the care, the patients experience intense pain and these painful procedures result in an increase of anxiety levels for patients. The nurses who are expert in burn care have a significant role in approaching the patients holistically, diagnosing pain and anxiety levels, managing pain control and reducing anxiety levels of the patients.

### **References**

- Akinci, I. O., & Basel, A. (2011). Burning Sedation and Analgesia. *Journal of Turkish Intensive Care Society*, 1 (9), 26-30.
- Alvi, T., Assad, F., & Malik, M. A. (2008). Anxiety and depression in burn patients. *Journal of Ayub Medical College, Abbottabad: JAMC*, 21(1), 137-141.
- American Psychiatric Association. (2013). Diagnostic And Statistical Manual Of Mental Disorders (DSM-5®). *American Psychiatric Pub.*
- Arif, M., & Ramprasad, K. S. (2013). Prevalence of Anxiety and Depression in Burns Patients in a Tertiary Care Hospital. *Religion (a), IOSR Journal of Dental and Medical Sciences* 26, 74.
- Baartmans, M. G. A., De Jong, A. E. E., VanBaar, M. E., Beerthuis, G. I. J. M., VanLoey, N. E. E., Tibboel, D., & Nieuwenhuis, M. K. (2016). Early management in children with burns: Cooling, wound care and pain management. *Burns*, 42(4), 777-782.
- Billings, D.M., & Stokes, L.G. (2007) Medical Surgical Nursing (2nd edn). *Missouri: Mosby Company.*
- Boluda, M. P., Asencio, J. M., Vela, A. C., Mayor, S. G., Campos, A. L., Leiva, I. L., & Kaknani-Uttumchandani, S. (2016). The Dynamic Experience Of Pain In Burn Patients: A Phenomenological Study. *Burns*, 42(5), 1097-1104.
- Bunevicius, A., Peceliuniene, J., Mickuviene, N., Valius, L., & Bunevicius, R. (2007). Screening for Depression and Anxiety Disorders in Primary Care Patients. *Depression and Anxiety*, 24(7), 455-460.
- Burn Incidence and Treatment in the United States: 2016 Fact Sheet.(2016). [http://www.ameriburn.org/resources\\_factsheet.php](http://www.ameriburn.org/resources_factsheet.php)
- Castana, O., Anagiotos, G., Rempelos, G., Adalopoulou, A., Kokkinakis, C., Giannakidou, M., & Alexakis, D. (2009). Pain Response and Paincontrol in Burn Patients. *Annals of Burns and Fire Disasters*, 22(2), 88.
- Cam Celikel, F. (2003). Chronic Aggression, Depression, Anxiety and Somatoform Disorders *Publishing, Istanbul*
- Cimen, A., & Erdine, S. (2007). Burn Pain and Its Treatment. *Turkey Clinics Journal of Surgical Medical Sciences*, 3(1), 60-64.
- Eti, Aslan, F., & Ozbas A. (2014). Agri's Nature and Control (2nd edn). *Academician Publishing, Ankara: 227-234.*
- Fakhar, F. M., Rafii, F., & Orak, R. J. (2013). The Effect of Jaw Relaxation on Pain Anxiety During Burn Dressings: Randomised Clinical Trial. *Burns*, 39(1), 61-67.
- Gauffin, E., Oster, C., Sjoberg, F., Gerdin, B., & Ekselius, L. (2016). Health-Related quality of Life (EQ-5D) Early After Injury Predicts Long-Term Pain After Burn. *Burns*, 42(8), 1781-1788.
- Gregoretti, C., Decaroli, D., Piacevoli, Q., Mistretta, A., Barzaghi, N., Luxardo, N., ... & Azzeri, F. (2008). Analgo-Sedation of Patient Swith Burn Sout Side The Operating Room. *Drugs*, 68(17), 2427-2443.
- Guloglu, R., & Aksoy, M. (2007). Prevention From Burns: To Who, How?. *Turkiye Klinikleri Journal of Surgical Medical Sciences General Surgery*, 3(1), 70.
- Hanafiah, Z., Potparic, O., & Fernandez, T. (2008). Addressing Pain in Burn Injury. *Current Anaesthesia & Critical Care*, 19(5), 287-292.
- Hsu, K. C., Chen, L. F., & Hsieh, P. H. (2016). Effect of Music Intervention On Burn Patients' Pain and Anxiety During Dressing Changes. *Burns*, 42(8), 1789-1796.
- Kabalak, A. A. (2012). Burn Intensive Care and Management of Special Problems, *Intensive Care Journal*, 10(4), 171-179.
- Karamustafahoglu, O., & Yumrukcal, H. (2011). Depression and Anxiety Disorders. *Sisli Etfal Hospital Medicine Sector*, 45, 65-74.
- Karateke, Y. (2010). Examination of the Relationships Between Burn Pain, Anxiety and Depression in Burn Patients. *Istanbul University, Institute of Health Science, Department of Surgical Nursing. Master Programme, Istanbul.*
- Kursun, S. (2007). Burn Pain and Nursing Care. *Florence Nightingale Nursing Review*, 15 (60), 195-199.
- Kutlu, R., Isiklar-Ozberk, D., Gok, H., & Demirbas, N. (2016). Cardiology Intensive Care Unit; Cigarette; Hospital Anxiety And Depression Scale. *Turkish Journal of Thoracic and Cardiovascular Surgery*, 24(4), 672-679.
- Loncar, Z., Bras, M., & Mickovic, V. (2006). The Relationships Between Burn Pain, Anxiety and Depression. *Collegium antropologicum*, 30(2), 319-325.
- McQuillan, K.A., Makic, M.B.F., & Whalen, E. (2009). *Trauma Nursing*. Missouri: Saunders Elsevier, 880-885.
- Papaioannou, V., Chouvarda, I., Gaertner, E., Benyamina, M., Ferry, A., Maurel, V., & Mebazaa, A. (2016). Heart Rate Variability and Cardiac Baro Reflex Inhibition-Derived index Predicts Pain Perception in Burn Patients. *Burns*, 42(7), 1445-1454.
- Park, E., Oh, H., & Kim, T. (2013). The Effects of Relaxation Breathing on Procedural Pain And Anxiety During Burn Care. *Burns*, 39(6), 1101-1106.
- Pazar, B., Iyigun, E., & Sahin, İ. (2016). Determination of Sleep Quality in Subacute and Chronic Period of Burn Patient. *Trauma and Emergency Surgery Journal*, 22 (5), 489-494.
- Raymond, I., Ancoli-Israel, S., & Choinière, M. (2004). Sleep Disturbances, Pain and Analgesia in Adults Hospitalized for Burn Injuries. *Sleep Medicine*, 5(6), 551-559.

- Seyyed-Rasooli, A., Salehi, F., Mohammadpoorasl, A., Goljaryan, S., Seyyedi, Z., & Thomson, B. (2016). Comparing the Effects of Aromatherapy Massage and Inhalation Aromatherapy on Anxiety and Pain in Burn Patients: A Single-Blind Randomized Clinical Trial. *Burns*, 42(8), 1774-1780.
- Shen, J., Giles, S. A., Kurtovic, K., Fabia, R., Besner, G. E., Wheeler, K. K., & Groner, J. I. (2017). Evaluation of Nurse Accuracy in Rating Procedural Pain Among Pediatric Burn Patients Using the Face, Legs, Activity, Cry, Consolability (FLACC) Scale. *Burns*, 43(1), 114-120.
- During Hospitalization for Major Burn Injury Predict Chronic Pain. *Pain*, 138(3), 497-506.
- Talu, G.(2007). Burn Pain and Treatment (3<sup>rd</sup> edn). *Nobel Tip Publishing*, İstanbul:184-187.
- Yavuz, M. (2014). Internal and Surgical Care. Academician Medicine Publishing, Adana:109.
- Yorganci, K., & Gelecek Geyik, S. (2007). Monitoring and Treatment of Severe Burn Patient. *Hacettepe Medical Journal*, 38 (3), 135-140.

Smith, M. T., Klick, B., Kozachik, S., Edwards, R. E., Holavanahalli, R., Wiechman, S., &Fauerbach, J. A. (2008). Sleep on Set Insomnia Symptoms