



Study of Platelet Count as a Prognostic Factor in Burns Patients

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Aim: To study the platelet count as a prognostic indicator in burns patients

Objective: To evaluate the platelet count in patients with burns and its significance in early detection of post burn septicemia.

Methodology: A study was carried out in the department of surgery in Saveetha medical college from January to June 2021.

50 burns patients were included in the study and their platelet count was monitored on day 1 and assessed on day 7, 14 and 21 using standard methods. Based on the outcome the patients were grouped as survivors and non survivors.

Results: Out of the 50 patients 32 patients survived, 18 patients died. In both the groups the platelet count decreased initially. In the survivors group the platelet count increased gradually whereas in the non-survivors it was found to be decrease and continued till death.

Conclusion: A decline in platelet count is a poor prognostic factor. The outcome of burns patients can be improved by giving appropriate and timely treatment.

Keywords: Burns; growth factor; platelet; TLC.

1. INTRODUCTION

A burn is an injury to the skin or other tissue damages that result from heat, radiation, friction, radioactivity, electricity or contact chemically. Burns may be minor medical problems or life threatening emergencies.

It causes immunosuppression that produces the burns patient at risk of infections. Most common explanation for death in burns patients are thanks to wound sepsis [1]. Platelets play a crucial role in severe haemostasis disorders and immunologic response impairments in burns patient. Platelets together with coagulation factors are liable for blood haemostasis by clogging vessel injuries.

Platelets are deployed rapidly to sites of infection or injury. They modulate inflammation by secreting chemokines, cytokines and other mediators of inflammation. They also secrete platelet derived protein.

A decrease in platelet count that's thrombocytopenia is typically seen in burns patients commonly related to septicaemia [2]. Platelet destruction is observed in these patients. it's also likely that some impairment of platelet production occurs in patients with septicaemia.

2. METHODOLOGY

The study was conducted within the department of general surgery, Saveetha medical college and hospitals, Chennai. a complete of 50 cases were taken.

A study was conducted to check the platelet count in burns patient. the dimensions of the burn is measured in percentage of total body extent that's affected [3].

Burns are classified as first, second, or third-degree, looking on how deep and severe they penetrate the skin's surface.

First-degree burns affect only the epidermis, or outer layer of skin. The burn site is red, painful, dry, and with no blisters [4].

Second-degree burns involve the epidermis and a part of the dermis layer of skin. The burn site appears red, blistered, and should be swollen and painful.

Third-degree burns destroy the epidermis and dermis. Third-degree burns may damage the underlying bones, muscles, and tendons. The burn site appears white or charred [5]. There isn't any sensation within the area since the nerve endings are destroyed.

Burns affecting 10 percent of a child's body and affecting 15 to twenty percent of an adult's body are considered to be major injuries and need hospitalization and extensive rehabilitation.

The platelet count was monitored to determine its effect on burns patients.

All adults above 18 year regardless of the sex admitted in burn ward were included within the study. Total body surface area was calculated and also the degree of burn was estimated [6].

The platelet counts of burns patients was monitored on days 1,7,14 and 21.The changes during this count is taken as a prognostic factor in these patients and their rate of survival is estimated [7].

3. RESULTS

A total of 50 patients were included within the study. Age distribution:

Majority of the burns patients admitted were within the age of 50-60 years

| AGE (in years) | Number |
|----------------|--------|
| 50-60 | 22 |
| 40-50 | 18 |
| <30 | 10 |

Out of the 50 patients 22 were found to be females and 28 males.

| SEX | Number |
|---------|--------|
| Males | 28 |
| Females | 22 |

Majority of patients within the study had 21-30% burns, followed by 31-40%

| TBSA | Number |
|--------|--------|
| 21-30% | 22 |
| 31-40% | 18 |
| 41-50% | 6 |
| >50% | 4 |

Degree of burn was evaluated. Out of the 50 cases 29 were 2nd degree burns and therefore the rest 21 were 3rd degree burns.

| Degree of burn Number | Number |
|-----------------------|--------|
| 2 nd | 29 |
| 3 rd | 21 |

Mean platelet count was monitored on day 1,7,14,21 days.

Day 1

| | Mean platelet count |
|--------------------|---------------------|
| Survivors (32) | 3.09 |
| Non-Survivors (18) | 2.54 |

Day 7

| | Mean platelet count |
|---------------|---------------------|
| Survivors | 2.03 |
| Non-Survivors | 1.33 |

Day 14

| | Mean platelet count |
|---------------|---------------------|
| Survivors | 1.34 |
| Non-Survivors | 0.67 |

Day 21

| | Mean platelet count |
|---------------|---------------------|
| Survivors | 1.77 |
| Non-Survivors | 0.50 |

In relation to the disease outcome,32 patients in our study group survived and 18 patients died. Comparison between surviving and nonsurviving patients showed a significant difference throughout the whole period. (<0.001; p=0.045).

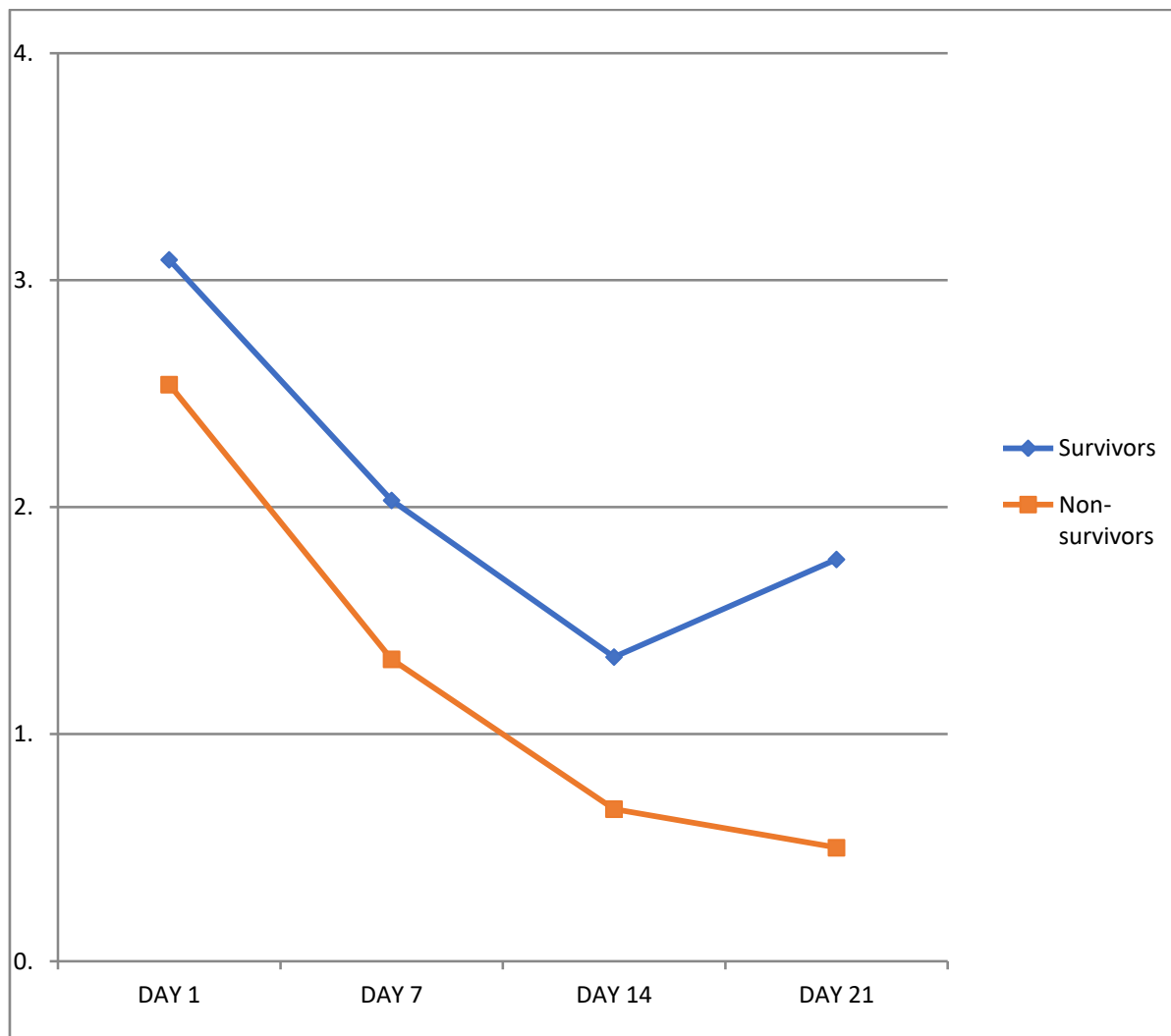


Fig. 1.

4. DISCUSSION

In this study, it's found that predominant victims of burn injury are within the cohort of 50–60 years. It absolutely was more common among females. Social customs and problems could be important factors within the young female population.

Survivors within the present study show decrease in platelet count within the initial post-burn days followed by rise in platelet count to the conventional level on subsequent post-burn days. This finding coincides with similar observation within the studies by Pavic et al [8]. Of the 50 burn patients, 32 survived having rebound increase in platelet count. Of twenty-two patients in survivors, platelet count on the 7th post-burn day decreased below the normal level. Seventh day onward, it started increasing. Thus, the rising trend in platelet count in survivors after initial fall coincides with the study conducted by Macedo et al [9].

In this study, every burn patient was followed up for 21 days (if no death occurs) and behavior of platelet count was studied. In nonsurvivors, declining trend in platelet count was observed with development and progression of septicemia. Thus, this declining platelet count are often correlated with bad prognosis of patients. Similar findings were observed by other authors Vilian et al [10] and Housinger et al [11]. They were observed for progressive decrease in platelet count on subsequent post-burn days in nonsurvivors. They correlated this observation with bad prognosis of the patient.

The study suggests that appropriate and timely treatment will improve the condition of the patient and increase in survival rate.

5. CONCLUSION

Burn injuries are a significant public health crisis. It's one in every of the foremost common sorts of trauma within the world [12]. This study was conducted to assess the role of platelet count as a prognostic indicator in burns patients.

There was a big decline in platelet count within the non survivors. This could be detected at early stages and appropriate treatment should be provided.

Treatment starts from the location of injury. Any associated trauma should be ruled out and also

the patient should be safely taken to the closest burns unit for appropriate and timely management [13].

Burns is one in every of the most important causes of death, awareness should be created among about the danger factors and complications of burns.

If a burn injury occurs appropriate and timely management should be provided to avoid further complications and faster recovery of the patients [14]. Appropriate treatment should be provided depending upon the severity of the burns.

CONSENT

Further informed oral consent was obtained from all the patients before they were included in the study.

ETHICAL CONSIDERATION

Before starting the study, the Institution Review Board of Saveetha University has approved our protocol, later grant sanction form was obtained from HOD's of all department.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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