



Surgery

NEW METHOD OF PHYSIOTHERAPY ASSESSMENT AND FOLLOW-UP FOR BURNS PATIENTS

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ABSTRACT **INTRODUCTION:** Rehabilitation of burn injuries are challenging as they might result in loss of function or even loss of limbs. Among the injuries it is the second major cause of morbidity next to road traffic accidents. Physiotherapy modalities are important for burns rehabilitation. Among them a good assessment, formulation of appropriate protocols customized for each patient and a regular follow-up are vital. The aim is to formulate an assessment chart for burn victims and assess the outcome of physiotherapy protocols based on the assessment chart
AIM: To formulate an assessment chart for burn victims and assess the outcomes of physiotherapy protocols based on the assessment chart.
MATERIALS AND METHODS:
 • Study undertaken at Tertiary level Burn Centre at Govt. Kilpauk Medical College Hospital, Chennai.
 • Two year period – Jan 2016 to Dec 2017
 • Total number of in-patients- 640
 All the patients included in the study were assessed according to the new assessment chart and the protocols for management were formulated. Patients were followed up regularly and assessed periodically. Results were analyzed according to the FIMS chart
RESULT: The results of rehabilitation were analyzed. The most vulnerable period in which there was deterioration in function were assessed, with respect to neck, upper limbs and lower limbs
CONCLUSION: The KMC assessment chart was found to be a useful tool both in the assessment and follow-up of the burns patients.

KEYWORDS :

INTRODUCTION

India is the second most populated country in the world has an estimated annual burn incidence of more than 6.7 million. Most of the burns cases are life threatening and a majority of them get crippled or require multiple surgeries and prolonged rehabilitation. Seventy percent of the burn victims are in the most productive age group of 15-40 years and most of the patients belong to the poor socio-economic strata. So, keeping in mind the magnitude and importance of this problem the necessity and importance of the new burns assessment procedure is much appreciated.

AIM: In this retrospective study we have aimed to understand the different periods in which different parts of the body get stiff. We use a new chart for this purpose, which takes into account all the parts of the body. Then we studied the new physiotherapy assessment form to evaluate the treatment methods and timings for the prevention of contractures

MATERIALS AND METHODS

Study period: 2 years (January 2016 to Dec 2017)
No of Patients: 640

INCLUSION CRITERIA: All patients admitted with <40% of burns were included in this study

EXCLUSION CRITERIA:

1. Patients less than 5 years and more than 70 years of age
2. Patients with more than 40% of burns
3. Patients who were treated as outpatients

These patients were first assessed with the new chart on day 5 and were followed up every 5 days. They were given standard physiotherapy protocols. The results of functions were analyzed after a minimum period of 3 months.

In this chart, we first fill in the basic details of the patient, which includes name, age, sex, percentage and type of burns, date of burn injury. We assess the level of mouth opening, neck, shoulder, elbow, forearm, hand, hip, knee and ankle mobility ranges and also about the ambulatory status of the patient to denote the range, we use 4 colors in the chart. We use red to indicate Grade 1 (severely affected), Yellow for Grade 2 (moderately affected), Green for grade 3 (normal ranges) and blue for the unaffected area. We initially assess the patient on the 5th day and periodically review them on 10th, 15th, 20th and 25th day. Next the ambulatory assessment of the patient is marked. if the patient isn't mobile, we mark it in red (Grade 1) and if the patient walks with the help of aids, walker support we mark it in yellow (Grade 2). If the patient is independently mobile, we mark it in blue. We also note about the splints and mobilization pattern during our assessment.

AGE	NO OF PATIENTS
5-15	45
16-25	87
26-45	102
46-70	46
TOTAL	280

FOLLOW UP < 3 MONTHS	197
FOLLOW UP between 3 months and 2 years	87
TOTAL	280

MALE	87
FEMALE	123
MALE CHILD	36
FEMALE CHILD	34
TOTAL	280

MALE	87
FEMALE	123
MALE CHILD	36
FEMALE CHILD	34
TOTAL	280

MOUTH OPENING

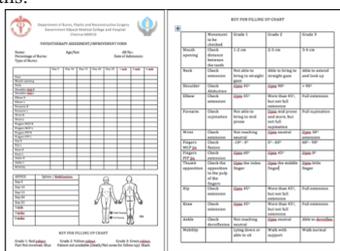


FIGURE 1: New Charts Used For Burn Therapy Assessment

FIGURE 2: Significance Of Mouth Opening

Regarding the mouth opening the vulnerable period (Figure 2) was on the 10th day. When we assessed him on the 5th day his mouth opening range was normal. But on the 10th day when we assessed we found out that his mouth opening range was moderately affected. After assessing 29 patients with facial burns we found out that 12 patients had a full range of mouth opening. 15 had a moderate range and 2 had a severely affected range. We use a top to screw in between the teeth and a dynamic mouth opening splint to maintain the full range. Now the assessment shows that the mouth opening is not a problem on the 5th day but it may be a problem on the 10th day. By using a dynamic mouth opening splint we can maintain the mouth opening range.

NECK:



FIGURE 3: Significance Of Neck Contractures

Regarding the neck we found that the vulnerable period for neck stiffness is the 15th day (Figure 3). We all know as the burn wound heals it takes the shortest route possible. It webs along the body's natural contour (neck, shoulder and the knee). One classical example is the neck. After assessing 78 patients who had neck burns we found out that on the 15th day, 15 of them had full neck extension range and 52 were moderately affected and 11 were severely affected. So now our assessment chart shows that when they were assessed on the 5th and 10th day they had full neck extension ranges. But the vulnerable period is on the 15th day. Proper positioning of the neck, stretching exercises and using a cervical collar will help to maintain the neck extension range.

SHOULDER:



FIGURE 4: SIGNIFICANCE OF SHOULDER STIFFNESS

In patients with upper limb burns we found out that the vulnerable period for the shoulder stiffness is on the 15th day (Figure 4). After assessing 65 shoulder burns on the 15th day we found out that 17 patients had full shoulder range and 37 were moderately affected and 11 were severely affected. Shoulder mobilization using an overhead pulley, mariners wheel and using a shoulder abduction splint helps us to maintain a good shoulder range. This assessment chart shows that on the 5th and the 10th day the patients had good shoulder range but the vulnerable period was on the 15th day.

ELBOW:

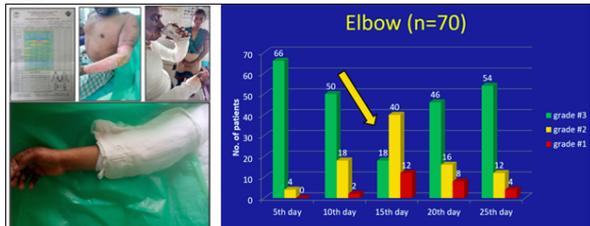


FIGURE 5: Elbow Stiffness And Significance

Regarding the elbow the vulnerable period for elbow stiffness is on the 12th day (Figure 5). On assessing 70 upper limb burns patients we found out that on the 15th day 18 patients had normal elbow range, 40 had moderately affected elbow range of motion and 12 patients elbow movements were severely affected. Encouraging activities of daily living such as eating, dressing and performing active, passive elbow mobilization exercises has proved to be effective in maintaining elbow range. From the chart we have found out that on the 5th and the 10th day elbow mobility may not be a problem but it gets stiff on the 15th day.

PRONATION SUPINATION:



FIGURE 6: Therapy To Maintain Pronation And Supination

Patients with upper limb burns always keep their forearm pronated as it is the position of comfort, ease and hence position of stiffness. After assessing 188 upper limb burns we have found out (Figure 6) that on the 10th day 53 patients had full pronation range, 97 had moderately affected range and 38 had severely affected range. Active and passive forearm mobilization exercises using a pronator supinator equipment helps us to maintain a forearm pronation supination range. So like the mouth opening pronation supination is also vulnerable on the 10th day.

HAND:

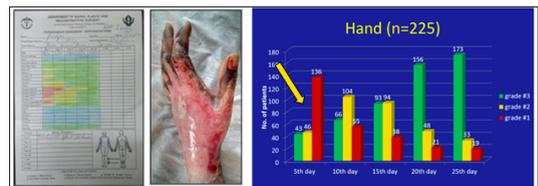


FIGURE 7: Stiffness In The Hand

With regards to mobility and function hand is the most sensitive, complex and prone for stiffness (Figure 7). The vulnerable period for the hand stiffness is on the 5th day itself. The advantages of using the chart has been felt and appreciated in many instances. One such instance was the Kodungaiyur mass burn incidence which happened on 15.07.2017, we had almost 13 patients admitted on the same day. Most of them had upper limb burns. Because we already knew that the vulnerable period of stiffness for the hand is on the 5th day itself we were able to understand the seriousness of it. All the affected hands were elevated and were given volar splints. This helped us to prevent secondary soft tissue damage active and passive mobilization of the hand were started without delay. We were very happy that almost 90% of them returned back to their normal life with normal hand functions. After assessing 225 hand burn patients on the 5th day we found out that 43 of them had good range of motion 56 had moderate range of motion and 136 patients had poor hand functions. Hence addressing the hand issues at a very early period itself helps us to regain normal hand functions with minimal problems. This is the practical usage of the chart

KNEE:

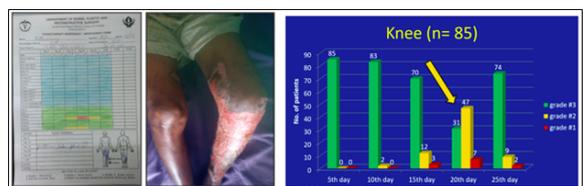


FIGURE 8: Stiffness In The Knees

When we assessed 85 lower limb burns patients we found out that the 20th day was the vulnerable period for stiffness (Figure 8). When we assessed them on the 20th day we found out that 31 of them had normal knee range, 47 had moderate knee range and 7 of them had severely affected knee range. Like the elbow the knee also faces difficulty in flexion and extension. Focussing on both becomes vital. Squatting exercises and posterior tube splints helps to improve knee range. So from this graph we understand that knee stiffness may not be a problem upto 20th day but may become stiff on the 20th day.

CONCLUSION



FIGURE 9: Overall Conclusion

In rehabilitation, assessment must be performed accurately, so that the problems can be identified (Figure 9). After the specific problem areas are identified, execution of physiotherapy modalities for burn patients, play a major role. This chart gives us a complete analysis of the functionality of the burns victims. This chart is very effective in comparing the functionality of a patient over different periods of time. It is also a very user-friendly chart.

To sum up, the problem with regards with stiffness and mobility of the hand, starts on the fifth day, mouth opening and pronation/supination starts on the 10th day. for the neck, shoulder, and elbow, the stiffness sets in on the 15th Day. And in the knee it is on the 20th day.

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