ORIGINAL ARTICLE

Pattern of Fodder Cutting Machine Injuries in Sialkot Region

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ABSTRACT

Aim: To study the Pattern of Fodder cutting Machine Injuries in Sialkot Region.
Study Design: Observational retrospective study.
Duration of study: August 2015- August 2018.
Methods: 196 patients of Fodder cutting Machine Injuries were included in this study 129 (65.8%) male and 71 (36.2%) females. A Performa was designed to record demography data and management. An inform consent of each patient was taken. The permission of ethical committee of the institute was also taken. The data was analyzed for results by SSP
Results: There were 12 (6.1%) male and 17 (8.6%) female patients between the ages of 1-10 years. between the ages 11-20 years there were 23 (11.7%) male and 10 (5.1%) female patients of fodder cutting machine injuries were seen. Between the ages of 21-30 years 20 (0.20%) male and 14(7.14%) female patients, between the ages of 31-40 years 26(13.26%) male and 12 (6.12%) female patients, between the ages of 41-50 years 3- (15.30%) male and 3(1.53%) female patients , between the ages of 51-60 years 10 (5.1%) male and 6 (3.06%) female patients, between the ages of 61 to 70 years 7(3.5%) male and 2 (1.02%) female patients, between the ages of 71 and above years 1(0.51%) male and 3(1.53%) female patients of fodder cutting machine injuries were seen.
Conclusion: Commonly identifiable factors include lack of training, type of fodder cutting machine, operator's age and state of mind. Prevention of fodder cutting machine injuries is only option to prevent loss of life and prevent disability in young and productive age group. Modification of machinery design by shielding the fodder cutting blades. Addition of fodder feeding tunnel will prevent direct contact with blades and decrease chances of injury. Prohibiting untrained users will also decrease number of injuries in elderly and children. Awareness campaign directed at its proper use should be started in rural areas.
Key words: Fodder cutting machine, Site of Injuries, Age and gender.

INTRODUCTION

Household use of fodder cutting machines most commonly results in injuries which present to Trauma Centre of every hospital in Pakistan[1]. Diverse injuries present in trauma Centre of our hospital as it is only tertiary care hospital in Sialkot region and encompass both genders and of all age groups. Commonly young adults and children present with fodder cutting machine injury [2].Mostly upper limbs are affected in particular hand and digits [2]. Fatal and non-fatal injuries vary according to geographic location. Mostly victims are young adults and elderly who are inexperienced in use of fodder cutting machine[3]. This young population is future of any country and hence their disability results in loss of valuable human resource and brings added burden to our community [4]. In US 15.5%-17.5% fatalities were related to children less the 15 years of age [5]. Rates of childhood fatal injuries are 2.3 to 30.9 per 100000 depending on different areas in US [6.] In European countries rates of fatal and non-fatal injuries are similar [7]. There is no national registry to quote exact figures for traumatic accidental injuries related to agriculture in Pakistan. Local studies by independent researchers have been conducted. Our study was designed to keep in view of most common etiological factor encountered in our emergency department i.e. Fodder cutter injuries or Toka injuries

MATERIAL METHODS

Purpose of our study was to study demographic distribution, pattern of injuries and risk factors involved in Fodder cutting machine injury. Study was conducted at Plastic Surgery Department Allama Iqbal Memorial Teaching Hospital for duration of 3 years August 2015 till August 2018. It was designed as Observational retrospective study. All injuries involving both gender of all age groups caused, by fodder cutting machine (Toka) were included. Injuries caused by any mechanism other than fodder cutting machine were excluded to specify burden of morbidity and mortality by this specific instrument.

Patients presenting to Trauma Centre were referred from Basic Health unit and Rural Health Centre were resuscitated according to ATLS protocol. After stabilizing patients were referred to Plastic Surgery for evaluation of defects and their further management by different departments including Orthopedics, General surgery, Neurosurgery and Pediatric Surgery e.g. stump formation, amputation, and flap coverage (radial forearm groin and abdominal flaps), re implantation, grafting and reconstruction. Patient data was collected on Performa recording demographic data, site and mechanism of injury and further management done.

Mostly Right upper limb was involved with injuries ranging from amputations of distal phalanx hand Arm and forearm amputations. Pattern of injuries showed similar distribution across both gender, 15 cases were of scalp avulsion caused by hair or head covering caught in Fodder cutter.

RESULTS

There were 12 (6.1%) male and 17 (8.6%) female patients between the ages of 1-10 years. between the ages 11-20 years there were 23 (11.7%) male and 10 (5.1%) female patients of fodder cutting machine injuries were seen. Between the ages of 21-30 years 20 (10.20%) male and 14 (7.14%) female patients, between the ages of 31-40 years 26 (13.26%) male and 12 (6.12%) female patients, between the ages of 41-50 years 3- (15.30%) male and 3

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(1.53%) female patients , between the ages of 51-60 years 10 (5.1%) male and 6 (3.06%) female patients, between the ages of 61 to 70 years 7 (3.5%) male and 2 (1.02%) female patients, between the ages of 71 and above years 1 (0.51%) male and 3 (1.53%) female patients of fodder cutting machine injuries were seen. It was seen that maximum patients of fodder cutting machine injuries were present between the age of 31-40 years, as this age is more mobile and active for agricultural activities as shown in table 1.

In our study the incidence of fodder cutting machine injuries according to site of body was right upper limb 90(45.9%) male and 35 (17.8%) female patients, left upper limb 15(7.65%) male and 10(5.10%) female patients, right lower limb 9(4.59%) male and 9(4.59%) female patients, left lower limb 8(4.08%) male and4(2.04%) female, head and neck 4(2.04%) male and 9(4.59%) female, groin 391.53%) male and 0 (0%) female patients were present. The incidence of fodder cutting machine injuries was maximum of right upper limb as shown in table 2.

Fig. 1 Fodder Cutting Machine

Fig.2: Scalp Degloving Injury caused by hair caught in Fodder Cutting Machine

Fig. 3 Fodder Cutting Machine Injury causing Scalp Degloving Injury

Fig. 4: Fodder Cutting Machine Injury causing Traumatic Amputation of Rt Hand

Fig. 5: Fodder Cutting Machine Injury causing Traumatic Ampuation of Rt Hand of a Child

Fig. 6: Fodder Cutting Machine Injury causing Amputation of Rt thumb

Fig. 7 Radial Flap Coverage of stump

Fig. 8: Reimplantation of Amputated Distal Phalanx

Table 1: Age distribution according to gender (n=196)

Age in yrs	Male	Female	Total
1-10	12 (6.1%)	17 (8.6%)	29(14.7%)
11-20	23 (11.7%)	10 (5.1%)	33(16.8%)
21-30	20 (10.20%)	14 (7.14%)	34(17.3%)
31-40	26 (13.26%)	12 (6.12%)	38(19.3%)
41-50	30 (15.30%)	3 (1.53%)	33(16.8%)
51-60	10 (5.1%)	6 (3.06%)	16(8.16%)
61-70	7 (3.57%)	2 (1.02%)	9(4.5%)
71 & above	1 (0.51%)	3 (1.53%)	4(2.04%)
Total	129 (65.8%)	67(34.18%)	196(100%)

Table 2 distribution of injuries according to site of body (n=196)

Site of Injury	Male	Female	Total
Right upper limb	90(45.9%)	35(17.8%)	125(63.7%)
Left upper limb	15(7.65%)	10(5.10%)	25(12.7%)
Right lower limb	9(4.59%)	9(4.59%)	18(9.18%)
Left lower limb	8(4.08%)	4(2.04%)	12(6.12%)
Head and neck	4(2.04%)	9(4.59%)	13(6.6%)
Groin	3(1.53%)	0(0%)	3(1.53%)

DISCUSSION

Pakistan is by large an agricultural country and 65 % of Pakistan population belongs to rural areas, where education is scarce 8. Pakistan's masses are directly or indirectly dependent on faming for production food. Part of economic burden of Pakistan is shared by cattle farming which require cutting of fodder by cattle farmers by fodder cutting machines[8].

Fodder cutting machine is one of most commonly used agricultural tool in Pakistan. The number and severity of injuries has increased dramatically after automation as manual fodder cutting machine were utilized in early part of century. Tractor-related injuries are the leading types of fatal injuries; injuries involving agricultural machinery, animals, and trucks are the leading types of non-fatal injuries[7]. Victims of fatal accidents range in age from less than 1 year to over 90 in industrialized countries [8]. In Pakistan Fodder cutting machine is a major contributor of injuries in agricultural sector[9 10]. In our study the pattern of injuries was similar to other local studies with most commonly involving male gender[11]. Young age group was mostly commonly affected due to their active involvement in agricultural activities[10 11]. Children are involved while taking place of adults or mistakenly playing with fodder cutting machine[9, 10, 11]. Both genders were equally affected as men along with women are involved in household agricultural work[12],[13]. Most common type of injury was amputation involving Right upper limb at different levels phalanx, hand, forearm and arm as shown in other international studies[14].

CONCLUSION

Commonly identifiable factors include lack of training, type of fodder cutting machine, operator's age and state of mind. Prevention of fodder cutting machine injuries is only option to prevent loss of life and prevent disability in young and productive age group. Modification of machinery design by shielding the fodder cutting blades. Addition of fodder feeding tunnel will prevent direct contact with blades and decrease chances of injury. Prohibiting untrained users will also decrease number of injuries in elderly and children. Awareness campaign directed at its proper use should be started in rural areas.

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