INTRODUCTION

Bed-fences are used to prevent the fall of patients or the drop of bedclothes in many hospitals and medical facilities. The so-called bed-fences or bedrails include side-rails of beds, folded types of side-rails and handrails (care-bars). The relation between actual use of bedrails by inpatients and the prevention of falls as the nurses’ rationale was discussed (Healey et al., 2009), and the incident of highly set bed height for preventing fall of patients were reported (Tzeng and Yin, 2008). Many accidents relating to bed-fences were reported (in the Home Page of the Japan Council for Quality Health Care, Ministry of Health, Labour and Welfare) from many hospitals and medical facilities, including a number of serious ones (JCQHC, 2009).

Although the incidents were reported in the meetings and the necessary preventive measures were discussed in our hospital; Asao General Hospital of Rehabilitation in Kawasaki City, to which first three of the authors are belonging, there are still now many possibilities of accidents because of the characteristics of patients; that is elderly patients with dementia with or without higher brain dysfunction whose behaviors are not easily predicted.

It is very important to develop safer bed-fence-covers to prevent or restrict the patients’ injuries. It is true that there are some ready-made products for bed-fence-covers, but they are not sufficientlysafe. The basic problems of bed-fence-covers in hospitals were listed for preventing relevant accidents based on the investigation into actual conditions in a hospital in Kawasaki City. There were many elderly aged patients with dementia, higher brain dysfunction or psychosis in the hospital. They sometimes fell into the gaps of bed-fences, resulting in serious accidents. It was due not only to the structure of the bed-fences, but also to the characteristics of patients. Therefore the authors listed up the problems concerning the accidents to recognize them: (i) as physical conditions, (1) they could not move by themselves because of paralysis or decrease of fitness, (2) they could not feel when they were pinched by the gaps because of decrease of sense, (3) they moved irregularly or violently without their intention, and (ii) as mental conditions, (1) they took dangerous behaviors because of dementias, (2) they could not control their behaviors because of higher brain dysfunctions, (3) they could not control their feelings and moved violently because of mental disorders.

The authors intend to develop safer bed-fence-covers to prevent these accidents for the elderly patients.

Key words: bed-fence; bed accident; old aged patients; dementia

THE BASIC PROBLEMS OF BED-FENCE-COVERS IN HOSPITALS FOR PREVENTING ACCIDENTS BASED ON THE INVESTIGATION INTO THE ACTUAL CONDITIONS: FOR DEVELOPING THE SAFER BED-FENCE-COVER FOR ELDERLY PATIENTS

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safe for those elderly patients mentioned above. The authors investigated the actual accidents and incidents that occurred in our hospital and listed up the problems. The listing of the basic problems was thought to be useful for the development of safer bed-fence-covers for old-aged patients. The consensus for publishing the results was obtained from the hospital.

LISTING OF THE PROBLEMS ABOUT REPORTED BED-FENCE ACCIDENTS

Basic patterns of bed-fence accidents

The bed-fences are generally made of steel pipes in lattice shape. There are gaps between pipes, between fences and between a fence and the bed. The accidents happened in many cases when some part of the patient fell into the gap. The accidents could be serious when the head or neck was pinched in the gap. The oppressions onto fences could also be dangerous, especially when the face or the neck was oppressed. The incomplete lock of a fence could lead to the fall or slip of the patient into the gap. The suffocation by fences and hanging of clothes on fences could also lead to serious accidents.

Serious cases

Five serious accidents occurred recently (JCQHC, 2009) and their problems were listed as follows; (the date of accident and its contents)
1: 10 May 2007: The clothes were hanged on the swing-arm knob, and the patient was suffocated to death.
2: 22 October 2007: The patient slipped to fall and his arm was pinched in the gap of a bed-fence, and seriously injured.
3: 4 November 2007: The patient fell down when stood up because the handle was not fixed and was seriously injured (cracks on the costal bones).
4: 25 December 2007: The patient was found dead with his neck pinched by and hanged on the gap of a bed-fence.
5: 21 January 2008: The patient was found dead with his neck pinched between bed-fences from outside.

The important points to avoid accidents shown in these accidents are as follows; At first the correct usage of bed-fences, second, the frequent observation of the patients. But these are limited in actual situations in hospitals and medical facilities because of the characteristics of patients such as dementias and the lack of nurses. Therefore adequate alarm systems of the beds should be installed to inform the occurrence of an accident to nurses.

ACTUAL INVESTIGATION OF BED-FENCE ACCIDENT INTO ASAO GENERAL HOSPITAL OF REHABILITATION

Investigated cases

Insertion types of bed-fences have been mainly adopted in the hospital, and there are many patients with dementia, higher brain dysfunctions or psychosis. There have occurred but several accidents concerning the bed-fences in the hospital although they were not serious. The investigated cases are as follows (more details are in Table 1);
1: A patient with hemiplegia, dementia and higher brain dysfunction who could not hold his posture. He was lying on the bed with his head equipped up for tube-feeding. The nurse watched him intermittently. He was found with his right-side of the head falling down from the bed and oppressed by the bed-fence, almost 30 minutes after the beginning of tube-feeding. There was no surface wound but a scar on his head.
2: A patient with dementia was found with her leg projected outside through the bed-fence while
Table 1. Details of accidents that occurred in the hospital.

<table>
<thead>
<tr>
<th>Case</th>
<th>Sex</th>
<th>Age</th>
<th>Disease</th>
<th>Physical disableness</th>
<th>Dementia</th>
<th>HDS-R* (points)</th>
<th>Higher brain dysfunction</th>
<th>Days in hospital at accident</th>
<th>Accident date and time</th>
<th>Surface wound</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>68</td>
<td>Cerebral infarction, Pneumonia</td>
<td>Left hemiplegia</td>
<td>Present</td>
<td>0</td>
<td>Present</td>
<td>59</td>
<td>3 Oct. 11:45</td>
<td>Impression at right temporal</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>85</td>
<td>Right femur fracture (trochanter region)</td>
<td>Disuse syndrome</td>
<td>Present</td>
<td>7</td>
<td>NA</td>
<td>498</td>
<td>4 Nov. 13:42</td>
<td>Left shank skin peel off</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>98</td>
<td>Fracture of the pubic bone &amp; ischiadic bone</td>
<td>Disuse syndrome</td>
<td>Present</td>
<td>0</td>
<td>NA</td>
<td>48</td>
<td>31 Dec. 14:50</td>
<td>Left arm internal bleeding, scratch</td>
</tr>
<tr>
<td>4</td>
<td>Male</td>
<td>80</td>
<td>Cerebral infarction</td>
<td>Right hemiplegia</td>
<td>Present</td>
<td>12</td>
<td>Present</td>
<td>114</td>
<td>4 Jan. 8:25</td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>Female</td>
<td>93</td>
<td>Cerebral infarction</td>
<td>Left hemiplegia, Rigidity</td>
<td>Present</td>
<td>3</td>
<td>Present</td>
<td>2016</td>
<td>11 Jan. 9:30</td>
<td>Left shank internal bleeding</td>
</tr>
<tr>
<td>6</td>
<td>Female</td>
<td>83</td>
<td>Cerebral infarction</td>
<td>Right hemiplegia</td>
<td>NA</td>
<td>0</td>
<td>Present</td>
<td>205</td>
<td>25 March 13:00</td>
<td>Impression at forehead</td>
</tr>
<tr>
<td>7</td>
<td>Male</td>
<td>95</td>
<td>Pneumonia</td>
<td>Disuse syndrome</td>
<td>Present</td>
<td>0</td>
<td>NA</td>
<td>95</td>
<td>1 Apr. 22:35</td>
<td>None</td>
</tr>
</tbody>
</table>

*: HDS-R: The scale of intelligence for dementia, developed by Hasegawa (2004), which is commonly used in many hospitals; NA: Not Applicable
lying on the bed. Her skin was peeled off.

3: A patient with dementia. Her family attached equipment to her head without noticing her arm was projected outside through the bed-fence. It caused scratch of the arm and internal bleeding.

4: A patient with dementia and higher brain dysfunction. He sat on the bed with his both legs outside between the bed-fences. Afterwards he fell downwards, and was found with his both arms hanged on the bed-fence.

5: A patient with dementia and higher brain dysfunction, who had the rigidity of paralyzed leg. She fell and was pinched her body between bed-fences when she intended to move her posture.

6: A patient with higher brain dysfunction, with slight paralysis. She moved much without intention and tried to get up grabbing the bed-fence. She was found with her forehead pressed on the bed-fence.

7: A patient with dementia, who was sometimes uneasy at night. He became unable to take off his leg while repeating projecting his leg through the bed-fence.

List up the characteristics of old aged patients

When the patients were old-aged, the possibilities of resulting in accidents are involved not only in physical conditions but also in mental conditions. The authors listed related physical conditions as follows: (1) they could not move themselves in many cases because of paralysis or decrease of fitness, (2) they could not feel when they were pinched into gaps because of decrease in sensory perception, (3) they moved irregularly without their intention. As related mental functions, the following were listed. (1) they took dangerous behaviors because of dementia, (2) they could not control their behaviors because of higher brain dysfunction, (3) they could not control their feelings and moved violently because of mental disorders. It is very important to recognize these patients’ characteristics for preventing the accidents. The authors, recognizing the points, suggest the need to develop safer bed-fence-covers for preventing the accidents of elderly patients.

CONCLUSIONS

It was clarified from the investigation in our hospital that the accidents occurred due to the circumstances in which the patients could not avoid or escape by themselves because of their physical and mental characteristics. Fortunately, there occurred no serious accidents in our hospital because of early identification of the circumstances. This indicates that the safe bed care is supported not only by the safeness of bed-fence itself but also early findings. Therefore it is necessary to develop the new type of bed-fence-covers for ensuring the safeness of old-aged patients with dementia, higher brain dysfunction or psychosis.

REFERENCES


