

gradually calmed down. When we thought that every patient was under control, the patients who looked well suddenly showed symptoms of agranulocytosis, which turned deadly. Again, this made people fearful. The time periods of the two symptom onsets were quite different. Therefore, we will describe the two categories separately.

Cause of bleeding

On the second week, there were a few cases of sudden bleeding that turned deadly. This was seen among the people with gradually worsening anemia after the bombing. Death by uncontrolled epistaxis (nasal bleeding) and a case of hemorrhagic stool from a duodenal ulcer patient was also observed. There must have been a platelet disorder causing hemorrhage. I heard indirectly that there was a case of hematemesis.

(H) Late onset blood disorder

From the beginning of the fourth week to the eighth week, patients with marked subcutaneous hemorrhagic spots continuously appeared. These were the people who had received whole body dose of sparkling light 500 meters to 1 kilometer from the hypocenter, or the people buried under collapsed houses for several hours, or the people living in shelters or temporary huts for long periods of time in the hypocenter area after the bombing. Most of these people were previously in good health and worked to clean up.

For those patients with late onset blood disorder, their complexion became anemic. Fatigue gradually increased. Suddenly their body temperature rose. Several painful pustulous blisters the size of rice grains developed in the gingival and oral mucosa, and progressed to stomatitis.

The gingival bled easily, developed foul black-purple necrosis on those spots, then suppuration occurred. The pseudomembrane developed ulcers in the tonsil or its surrounding area. The patient had difficulty eating or found it impossible to eat due to severe pain.

The whole skin seemed greenish and deathly pale, and scattered bean size spots appeared. At the beginning, these spots occurred on the trunk and upper shoulder and spread to the whole body, many on the thighs.

The size of these spots ranged from the tip of a pin to a rice grain. Most of them were of bean size, some the size of a small fingertip. Also, there were a few cases of bloody blisters. There was a slight tendency for the blisters to fuse together. With treatment, these disappeared without scars after a short period.

There was no case of pain or itching pain. These symptoms reminded me of agranulocytosis. It must be that the number of white blood cells markedly decreased. The children got sick early, and in the elderly it developed late. There was difference in the severity of symptoms. The cause of difference was the dose of irradiation first, but also the individual's physical constitution, age, and health condition. The mortality was high in the other aid station. Among our patients, the

mortality rate was 20%.

Complications

There were two cases of pneumonia as a complication. These cases developed into aspiration pneumonia by the aspiration of sputum after prior development of pharyngitis. There was digestive organ disorder. The loss of hair was seen frequently. The observation of these symptoms not being seen among the pseudo-burn patients must be pointed out.

(I) Indirect disorder

Dermatitis

Plant vegetation also withered and died from the bombing. A farmer developed itching red vesicles on his both arms, legs and shoulders from cutting and carrying this withered grass on the following morning. It looked like his skin had erupted. We observed only one case, but it was said that there were others.

Suppuration

Several weeks after the bombing, the cases of pustulous vesicles from flea and mosquito bites continuously appeared. Also, small wounds easily suppurred. These were easily interpreted to be due to the decreased level of the body's resistance.

(J) Others

The above we described were our observed cases only. They were very small in number. Many of the other symptoms were observed by other relief organizations.

CHAPTER 5

Patient Statistics

SECTION 1

Statistics in general**(A) Number of patients**

We took care of patients at Nishiurakami, Koba, Kawabira, from the fourth day after the bombing to the second month afterward.

Number of patients 125 cases

(B) Sex

There was no difference in the numbers between males and females.

Male 62 cases

Female 63 cases

(C) Age

There were only a few children and elderly. This reason was not only from evacuation, as the children mostly died within three days. Whereas the elderly were insensitive to the radiation.

Children (below 15 years) 26 cases

Adults (16 years-60 years) 94 cases

Elderly (61 years and above) 5 cases

(D) Distance from the hypocenter

Within half a kilometer, survivors were few. There were the most survivors from a half to 1 kilometer. Patients showed mild symptoms at a

Within half a kilometer 3

1 kilometer 90

2 kilometers 11

3 kilometers 16

4 kilometers 1

5 kilometers 0

6 kilometers 0

7 kilometers 4

distance of 7 kilometers. Between 5 to 6 kilometers, lay the mountains where nobody lived.

(E) Prognosis

There was great fear in the community (about death), but the mortality rate was only one fourth of the patients. Within two months, more than half of the patients had recovered and returned to work. The severely wounded and those not completely recovered, or recently ill people, all got better. Some of them transferred to other aid organizations.

<u>Completely recovered</u>	<u>79 cases</u>
<u>Partially recovered</u>	<u>10 cases</u>
<u>Dead</u>	<u>29 cases</u>
<u>Transferred</u>	<u>7 cases</u>

(F) Treatment days

Activity period

From August 12 to October 8, outpatient clinical rounds were done.

Duration 58 days

Treatment days (Aggregate patient numbers)

We counted the days of treatment for all patients.

Aggregate treatment days 2,829 (person) days

Treatment days of the completely recovered

From the day of onset to recovery, the average number of required days for the 79 patients was a little over one month.

Average number of days to complete recovery 34 days

Days in bed till death

The duration from being wounded to the onset of sickness and death for 29 patients was an average of two weeks.

Average days in bed till death 14 days

(G) Symptoms

Classification by types of injuries

The same patients developed complications in addition to the primary injury. These were counted as two cases. Therefore, the total number of cases exceeds the number of patients.

Direct	<u>Instant onset</u>	<u>External injury</u>	<u>47 cases</u>
		<u>Pseudo-burn</u>	<u>36 cases</u>
		<u>Mixed injury</u>	<u>9 cases</u>
Early onset		<u>Blood disorder</u>	<u>6 cases</u>
		<u>Digestive organ disorder</u>	<u>15 cases</u>
Late onset		<u>Blood disorder</u>	<u>24 cases</u>
Indirect		<u>Indirect disorder</u>	<u>2 cases</u>

Presence of injuries

About a quarter of non-injured at the time of bombing developed late onset disorders.

Wounded	External wound	47
	Pseudo-burn	36
	Mixed injuries	9
	Total	92
Non-wounded	Buried but not wounded	15
	Non-wounded	18
	Total	33

SECTION 2

Statistics by type of injury

(H) External wound

Number of patients

Patients with mixed injuries in the last table are included because some of them had external injuries.

Number of patients with external injuries 56 cases.

Sex

Male 25
Female 31

Age

Children 7 cases
Adults 47 cases
Elderly 2 cases

Distance from the hypocenter

Injury by collapsed houses, shattered equipment and fragments of glass. The majority of these injuries occurred within a short distance from the hypocenter.

<u>Within half a kilometer</u>	<u>3 persons (3 deaths)</u>
<u>Within 1 kilometer</u>	<u>51 (12 deaths)</u>
<u>Within 2 kilometers</u>	<u>(0 deaths)</u>

Treatment days (Excluding dead and out-migrants)

<u>Longest</u>	<u>61</u>
<u>Shortest</u>	<u>14</u>
<u>Average</u>	<u>33</u>

Classification by type of wound

<u>Abrasion</u>	<u>19</u>
<u>Contusion</u>	<u>14</u>
<u>Cut wound</u>	<u>13</u>
<u>Miscellaneous wound</u>	<u>6</u>
<u>Stab wound</u>	<u>4</u>

Prognosis

<u>Complete recovery</u>	<u>34</u>
<u>Partial recovery</u>	<u>4</u>
<u>Dead</u>	<u>15</u>
<u>Out-migrants</u>	<u>3</u>

The dead

Mortality was relatively high. The majority of the patients showed later symptoms of radiation injury, fewer died of wounds.

<u>Number of external wound deaths</u>	<u>15</u>
<u>Mortality</u>	<u>27%</u>

Causes of death

<u>Wounds</u>	<u>3</u>
<u>Digestive organ disorder</u>	<u>7</u>
<u>Blood disorder</u>	<u>5</u>

Ages of the dead

<u>Children</u>	<u>2</u>
<u>Adults</u>	<u>12</u>
<u>Elderly</u>	<u>1</u>

(I) Pseudo -burn**Number of patients**

Number of pseudo-burn patients 45

Sex

<u>Male</u>	<u>27</u>
<u>Female</u>	<u>18</u>

Age

<u>Children</u>	<u>8</u>
<u>Adults</u>	<u>34</u>
<u>Elderly</u>	<u>3</u>

Distance from the hypocenter

Pseudo-burns were the result of direct exposure. The people in close proximity to the hypocenter died early. More survivors were at a greater distance compared to those within close proximity to the hypocenter.

<u>Within half a kilometer</u>	<u>0</u>
<u>Within 1 kilometer</u>	<u>20 (5 deaths)</u>
<u>Within 2 kilometers</u>	<u>10 (1 death)</u>
<u>Within 3 kilometers</u>	<u>15 (0 deaths)</u>

Treatment days (Excluding dead and out-migrants)

<u>Longest</u>	<u>61</u>
<u>Shortest</u>	<u>16</u>
<u>Average</u>	<u>31</u>

Prognosis

<u>Complete recovery</u>	<u>36</u>
<u>Partial recovery</u>	<u>3</u>
<u>Dead</u>	<u>6</u>
<u>Out-migrants</u>	<u>0</u>

Injured regions

Most injuries occurred to exposed regions. The lower half region of the body covered by air-raided clothes had fewer injuries. The upper half region of the body with open summer clothes exposing skin received more injuries. Injury by burning of the scalp was seen only in one male.

<u>Head</u>	<u>1</u>
<u>Face</u>	<u>29</u>
<u>Neck</u>	<u>10</u>
<u>Chest</u>	<u>10</u>
<u>Abdomen</u>	<u>1</u>
<u>Back</u>	<u>4</u>
<u>Arm</u>	<u>30</u>
<u>Leg</u>	<u>15</u>

Deaths

<u>Number of dead</u>	<u>6</u>
<u>Mortality</u>	<u>13%</u>

Causes of death

There were many poisoning deaths due to the decomposed substances of the skin of pseudo-burns. It was characteristic that there was no late onset disorder.

<u>Debilitation (poisoning)</u>	<u>5</u>
<u>Digestive organ disorder</u>	<u>1</u>
<u>Blood disorder</u>	<u>0</u>

Ages of the dead

<u>Children</u>	<u>2</u>
<u>Adults</u>	<u>4</u>
<u>Elderly</u>	<u>0</u>

(J) Early onset blood disorder Number of patients

Number of early onset blood disorder patients 6

Sex

<u>Male</u>	<u>5</u>
<u>Female</u>	<u>1</u>

Age

<u>Children</u>	<u>0</u>
<u>Adults</u>	<u>6</u>
<u>Elderly</u>	<u>0</u>

Distance from the hypocenter

Most cases of acute whole body radiation disorder occurred a short distance away from the hypocenter. There was one case in the far distance. The patient had a history of duodenal ulcer, which bled due to a mild blood disorder, but soon stopped bleeding, then migrated out.

<u>Within half a kilometer</u>	<u>2 (2 deaths)</u>
<u>Within 1 kilometer</u>	<u>3 (3 deaths)</u>
<u>Within 2 kilometers</u>	<u>0</u>
<u>Within 3 kilometers</u>	<u>1 (0 deaths)</u>

Prognosis

<u>Complete recovery</u>	<u>0</u>
<u>Partial recovery</u>	<u>0</u>
<u>Dead</u>	<u>5</u>
<u>Out-migrants</u>	<u>1</u>

Symptoms

Epistaxis 4
Hematemesis 1
Hemorrhagic stool 1
Wound bleeding 1

Presence of injury

External wound 3
Pseudo-burn 0
Buried but no injury 1
No injury 2

Deaths

Number of dead 5
Mortality 83%

Days of survival

Number of days from the bombing to death.

Longest 18
Shortest 8
Average 14

(K) Early onset digestive organ disorder Number of patients

Number of patients with early onset digestive organ disorder 15

Sex

Male 5
Female 10

Age

Children 4
Adults 11
Elderly 0