

### Distance from the hypocenter

Early onset digestive disorder was seen in the patients a short distance from the hypocenter, probably due to acute whole body radiation disorder.

<u>Within half a kilometer</u>	<u>1</u>
<u>Within 1 kilometer</u>	<u>14</u>

### Prognosis

All dead. It was said that all the out-migrants died soon after.

<u>Complete recovery</u>	<u>0</u>
<u>Partial recovery</u>	<u>0</u>
<u>Dead</u>	<u>13</u>
<u>Out-migrants (died afterward)</u>	<u>2</u>

### Symptoms

Diarrhea and high fever were the most obvious symptoms.

<u>Diarrhea</u>	<u>15</u>
<u>High fever</u>	<u>15</u>
<u>Oral pustulous blister</u>	<u>4</u>
<u>Stomatitis</u>	<u>5</u>

### Days of survival

From the bombing till death, the average number of days patients survived was more than 10 days.

<u>Longest</u>	<u>21</u>
<u>Shortest</u>	<u>7</u>
<u>Average</u>	<u>12</u>

### Presence of injuries

Many of these injuries were seen in patients buried by the collapsed houses but were uninjured.

<u>External injury</u>	<u>6</u>
<u>Mixed injury</u>	<u>1</u>
<u>Buried but no injury</u>	<u>7</u>
<u>No injury</u>	<u>1</u>

**(L) Late onset blood disorder Number of patients**

Number of late onset blood disorder patients 24

**Sex**

Male 9

Female 15

**Age**

Children 6

Adults 18

Elderly 0

**Distance from the hypocenter**

Within half a kilometer 0

Within 1 kilometer 20

Within 2 kilometers 0

Within 3 kilometers 1

Within 4 kilometers 1

Within 5 kilometers 0

Within 6 kilometers 0

Within 7 kilometers 2

**Prognosis**

Complete recovery 15

Partial recovery 4

Dead 4

Out-mierants 1

## Symptoms

<u>High fever</u>	<u>24</u>
<u>Anemia</u>	<u>24</u>
<u>Subcutaneous hemorrhagic spots</u>	<u>22</u>
<u>Gingival bleeding</u>	<u>7</u>
<u>Stomatitis, Pharyngitis</u>	<u>7</u>
<u>Hair loss</u>	<u>9</u>

## Time of onset

From the bombing to the onset of disease, the average number of days was within four weeks. The earliest was in infants, those especially developed very early. These types of patients appeared continuously, showing severe symptoms, which became most noticeable by the fourth week.

<u>Earliest</u>	<u>13th day</u>
<u>Latest</u>	<u>54th day</u>
<u>Average</u>	<u>29th day</u>

## Days till complete recovery

Treatment days of completely recovered patients who had received stimulating auto-blood transfusion were very short. Others took more than one month.

<u>Longest</u>	<u>38 days</u>
<u>Shortest</u>	<u>7 days</u>
<u>Average</u>	<u>22 days</u>

## Days in bed till death

The course of death was very rapid. From the onset, patients became critical and died soon.

<u>Longest number of days</u>	<u>14</u>
<u>Shortest</u>	<u>5</u>
<u>Average</u>	<u>9</u>

## Days of survival till death

For the patients who received lethal doses of radiation, these are the

<u>Longest</u>	<u>32</u>
<u>Shortest</u>	<u>17</u>
<u>Average</u>	<u>22</u>

numbers of days of survival from the bombing until death.

### **Presence of injury**

Note that many patients in this category were not injured, These symptoms were especially not seen in the pseudo-burn patients, There was some substance present which stimulated the hematopoietic system (blood cells forming organs) to prevent progression of symptoms in the pseudo-burn patients. Our idea of using auto-blood transfusion for blood disorder patients was based on these findings.

<u>External injury</u>	<u>4</u>
<u>Pseudo-burn</u>	<u>0</u>
<u>Buried but no injury</u>	<u>7</u>
<u>Non injured</u>	<u>13</u>

### **Location of patients after bombing**

The course of these symptoms was not due to primary radiation, but we need to consider secondary radiation showing long term effects at the site.

<u>Evacuated to other places in one or two days</u>	<u>14</u>
<u>Remaining in temporary housing on site</u>	<u>9</u>
<u>Absent at time, but moved back afterward</u>	<u>1</u>

### **(M) Indirect disorder**

#### **Number of patients**

These symptoms were mild. It was difficult to recognize their relation to the atomic bomb based only on the patients' complaints. The relationship must be defined based on the results of diagnosis. Or, it may be true that there were no other types of patients such as these.

<u>Number of indirect disorder patients</u>	<u>2</u>
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### **Distance from the hypocenter**

<u>7 kilometers</u>	<u>2</u>
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### **Symptoms**

<u>Skin injury</u>	<u>2</u>
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### **Prognosis**

<u>Complete recovery</u>	<u>2</u>
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## SECTION 3

**Statistics concerning the dead****(N) Total number of dead**

Total number of dead	<u>29</u>
Mortality	<u>23.2%</u>

**(O) Cause of death**

External injury	<u>3</u>
Pseudo-burn	<u>4</u>
Mixed injuries	<u>1</u>
Digestive organ disorder	<u>12</u>
Early onset blood disorder	<u>5</u>
Late onset blood disorder	<u>4</u>

**(P) Sex**

Male	<u>12</u>
Female	<u>17</u>

**(Q) Age**

Children	<u>9</u>
Adults	<u>19</u>
Elderly	<u>1</u>

**(R) Mortality by age**

Children	<u>34.6%</u>
Adults	<u>20.2%</u>
Elderly	<u>20.0%</u>



## CHAPTER 6

### Treatment

#### SECTION 1

### Environmental therapy

#### **Prognosis and environment**

It is an already known fact that the patients' recovery environment will affect the prognosis. As said in (V), Section 3 of Chapter 5, the mortality rate was high among people who lived in temporary housing at the site and low among people resting in their own homes. It was interesting to see that people evacuated to other people's houses had a mortality rate twice that of those who stayed in their own homes. This must have been due to the lack of miscellaneous instruments for nursing care at the temporary housing sites. Also, too many people crammed into a small room meant that the patients were unable to maintain bed rest. Possibly, they had difficulty in purchasing food. Their nutrition was also inadequate.

The people living in shelters or temporary huts on the site not only continuously received radiation, also leaking rain drops, blowing wind, etc, but had unsanitary living conditions. It was natural to see a high mortality rate. Wherever you stayed, there was no better place than your own house and nothing better than being taken care of by your own family.

Usually, a well-equipped hospital was better than one's own home environment. However, after the big bombing, the temporary aid station was inadequately equipped, without enough manpower for many patients, and placed in a room with visitors continuously coming and going. Due to so many patients being placed together, there was a bad smell which attracted flies. It was not a good place for convalescence.

The patients were selfish, always had to have their way. The selfdiscipline of a patient affected the prognosis of his illness. For example, you can freely break wind in your own house, but you have to suppress that with great difficulty in a big patient ward.

We took environmental therapy very seriously and encouraged home convalescence. The results were believed to be much better than if we had the patients come to the aid station. It was a great, heavy burden for the Relief Team to make rounds of the houses one-by-one in the mountainous valley. But, we enjoyed the success of our work.

#### **Convalescence**

We ordered absolute bed rest for the patients. We did not know which

organ systems would cause severe symptoms because of the uncertain nature of radiation effects, so the order was a precaution in any case. We chose the brightest room for patients, opened the windows, and allowed filtered sun light, including ultra violet light, to enter the room. However, direct sunlight was to be avoided. Mosquito nets were hung day and night to prevent flies and mosquitoes from getting in. Other requirements for nursing were introduced to the members of the victim's family and rigorously instructed.

These areas were made up mostly poor farms. Each home was not well equipped, but all family members took good care of their patients. A few helpless patients were saved. On the contrary, most of the patients carried out by hand-drawn cart to the far away aid station returned as cremated ashes.

The place was in the high lands and dry. Every morning, the fog came up from the streams of the valley, left the top of Mt. Mitsuyama, and floated as white clouds in the blue sky. These are thick green mountains as far as you can see. The people coming from ruined, bombed out Urakami sat there feeling reborn just to look at the scenery and to breathe fresh air. Here was the best environment for convalescence.

## SECTION 2

### Mineral spring therapy

#### **Effectiveness of mineral spring water**

It is a well-known fact from ancient times that mineral spring water is very effective for the treatment of burns and wounds. The molecular structure of underground virgin water is altered by high pressure and high temperature. The water gushes out from the ground with its normal atmosphere and normal temperature changed. The alteration is straightforward. Its atomic structure then returns to normal, but with some weak radiation. It is understood that this remnant energy is effective for treatment. This time, the pseudo-burns are a kind of radiation disorder. For the treatment of radiation disorder, stimulation by other kinds of weak irradiation is a good method of treatment.

We adapted mineral spring therapy for the treatment of pseudoburns. Since there were too many patients with too few supplies, mineral spring treatment was useful for saving treatment supplies. Also, it was helpful for the resident people to understand mineral spring therapy.

#### **Rokumaiita Mineral Spring**

In Rokumaiita, Koba, Nishiurakami, there was a mineral spring (a cold spring), which has been flowing up since ancient times and a spring inn had been set up there. However, the same place was found to have a gold mine. The flowing water was stopped and the inn business was

abandoned. At the present time, the mineral spring water flowed out from the area of the old abandoned gold mine, 200 meters west of the old flow source site.

The present outlet, located at the foot of the bank of rice field, is about 30 centimeters in diameter with weeds growing around. The amount of flow is 5 liters per second. It flows out as small stream between the weeds and pours into a small river. The spring water has no color, is transparent, has a temperature of 10 degrees Celsius tastes slightly acidic, and smells slightly of sulfurous hydrogen.

### **Efficacy**

The mineral spring water was warmed to body temperature and used in a hot bath or warm fomentation three times a day, one hour at a time. After the bath or fomentation, the wound was cleaned with hydrogen peroxide and applied vegetable oil. The results were great.

If the cleanliness of the wound was kept, it did not get infected.

Granulation tissue looked normal, skin growth was rapid.

For the people living far away from the spring's water source and unable to get to the water daily or for the people who doubted the effectiveness of mineral spring therapy, the duration of their complete recovery was markedly decreased (excluding the dead).

Thus, there was an average of two weeks for an early recovery. Also, mineral spring water therapy was effective for the treatment of external wounds.

Number of days for treating patients with pseudo-burns

Mineral spring therapy	Average of 20 cases	24 days
Control	Average of 19 cases	38 days

## SECTION 3

### **Auto-blood transfusion stimulation therapy**

#### **Method**

For the late onset blood disorder, Dr. Shi put in practice and recognized the great effect of the auto-blood transfusion stimulation therapy! The method was simple.

Sodium citric acid (an anti-coagulant) of 0.2 cc was taken up a 2 cc syringe. Then using this same syringe, we withdrew 2cc of intravenous blood from the patient, mixed (the blood and sodium citric acid) to prevent coagulation, then immediately injected the mixture into the patient's buttock, and massaged with warm compresses.

The patient may have complained of local pain but no side effect. The treatment was done every other day. A course of auto-blood transfusion

therapy was finished after the procedure was performed several times.

### **Results**

Symptoms subsided suddenly on the third day after the first injection. And other symptoms recovered rapidly. Thus, the progression of pharyngeal ulceration stopped, followed by a separation of the pseudomembrane and the ulcerative surface becoming clean. The pain disappeared and healed. The subcutaneous hemorrhagic spots did not recur. The spots disappeared gradually. Body temperature came down. The patient felt better. The duration of time for a complete recovery and a return to work in this group was much shorter than the control group's.

Number of days for auto-blood transfusion stimulation therapy	
<u>Auto blood transfusion therapy patients</u>	<u>Average of 12 cases 17 days</u>
<u>Control group</u>	<u>Average of 7 cases 31 days</u>

There were no cases of death for auto-blood transfusion treatment.

Number of patient deaths with blood disorder	
<u>Auto-blood transfusion therapy patients</u>	<u>0</u>
<u>Control group</u>	<u>3</u>

This therapy has advantages of being effective, simple, and easy to self-apply. Donors are unnecessary. There are no side effects. We will recommend it highly to the public.

We think that the principle of the function of auto-blood transfusion therapy was the same as therapy for any other diseases. Details remain unclear until we can perform tests. At present, we have no ability to do that. We think that the blood of pseudo-burn patients can be treated for late onset radiation disorders. But, the tests have not been done yet. We hope that the peers will do the research.

## **SECTION 4**

### **General treatment**

#### **(A) External injury**

The majority of externally wounded patients were rescued from being buried alive. Therefore, their wounds were not clean and were filled with coagulated blood or dirt. First the wounds were irrigated repeatedly with warm Creasol. Next, the penetrating residual fragment of glass, wood, bamboo, metal, dirt, concrete, clothes were searched for and picked out. Then, hydrogen peroxide, mercurochrome, or iodine was used for regular antiseptic measurement. The large lacerated wounds were then sutured. This made the first stage of wound healing complete. For the last stage,