Pictorial Essay

X-ray photography at Cambodian refugee camps on the Thailand - Cambodia border around 1980

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Overview

In the late 1970s, the news of Cambodian refugees in Indochina was prevalently reported around the world. At that time, in 1978, I had graduated from the Radiological Technologist School at Nagoya University in Japan and had just started working as a radiological technologist at what is now Fujita Health University Hospital. I had been concerned about Vietnam and Indochina since I was in high school, but I felt that it was a problem in a country far away from me. However, in 1980, my relationship with Indochina began. In December 1980, I received an urgent request from the chief technologist of the university hospital. "Is there anyone who would like to go to the Cambodian refugee camp on the Thailand and Cambodia border?" It was a request to participate as a member of a Japanese medical team in a Japan International Cooperation Agency (JICA) project. Since I had been interested in overseas activities, I applied to join the refugee relief medical team that very same day. One week later, I was on my way to Thailand.

At that time, I had only one year of experience as a radiological technologist and could not speak English. I boarded the plane with only some textbooks on X-ray photography and a compact English dictionary. In fact, this was the first time flying, meaning it was also my first time abroad. One day after arriving at the

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airport in Bangkok, I went to Sa Kaeo City near the Cambodian border. For three months, from December 1980 to March 1981, I worked as a radiological technologist on JICA's Cambodian Refugee Relief Medical Team. The other members were doctors, nurses, and a medical technologist from Tokyo Medical and Dental University and Okayama Saiseikai Hospital. Our JICA team was based at the Japan Medical Center in Sa Kaeo City, and in two refugee camps: Khao I Dang Camp, north of Aranyaprathet, and Bang Kaen Camp, west of Sa Kaeo City (Figure 1).

Figure 1. ***Thailand-Cambodia border,*** *the JICA team's activity sites; the Japan Medical Center (JMC) in Sa Kaeo City was the center of medical activities at two refugee camps, Khao I Dang Camp and Ban Kaeng Camp, and Crown Prince Hospital in Sa Kaeo City.*

Khao I Dang Camp

The Khao I Dang Camp is located a few kilometers from the Cambodian border, and there was a world-famous refugee camp at the time. The refugee camp was vast, with more than 160,000 refugees. Medical teams participated from all over the world, including France and Germany, in addition to Japan (Figure 2). Our JICA team operated the outpatient department and ward of Japanese Hospital, but the international team was in charge of X-ray photography. Figure 3 shows the examination room in Japanese Hospital. Figure 4 shows the ward of Japanese Hospital. The patients are lying on simple beds. Medical records and X-ray films were hanging above the patients' beds. The hospital was made of simple palm leaves, and the walls are very simple. Although it appears white in the photo, you can see the outside. When the wind blows, the ward is covered in sand. In Khao I Dang Camp, minor surgeries are performed in the refugee camp's operating room, but major surgeries are transported to the Japan Medical Center, about which I will explain later, where patients are admitted and operated on. Figure 5 shows the refugee home.

Figure 2. ***International Hospital Street in Khao I Dang Camp;*** *Khao I Dang Camp was located near the Cambodian border and housed 160,000 refugees. This photo shows the hospital street in the refugee camp. The hospitals were run with support from the International Red Cross and countries around the world. Each hospital was made of palm wood.*

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Figure 3. ***Examination room at a Japanese Hospital;*** *doctors and nurses were busy in the examination room and patients were arriving one after another.*

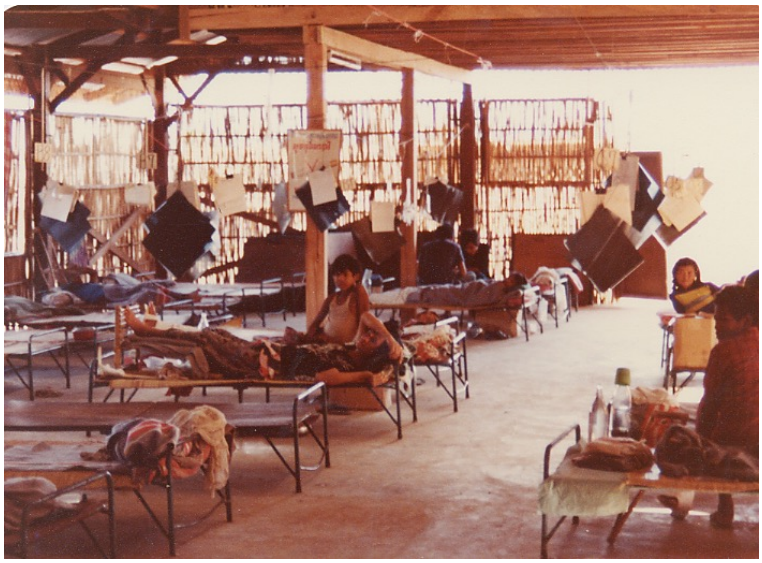

Figure 4. ***The ward of Japanese Hospital;*** *patients were lying on simple beds. Medical records and X-ray films were hanging above them. The buildings were very simple, with well-ventilated walls.*

Figure 5. ***Refugee housing;*** *refugees lived in simple houses made of palm wood leaves, one for each family.*

Ban Kaeng Camp

Ban Kaen Camp was located near the Japan Medical Center, north of Ban Kaen Station on the State Railway of Thailand (Figure 6). It seems that the last scene of the movie "The Killing Fields" was filmed there. There were tens of thousands of refugees in Ban Kaen Camp. Because Ban Kaen Camp is relatively small in scale compared to Khao I Dang Camp, refugee relief medical care was provided only by the JICA team. I was the main X-ray taker here, and assisted several refugees. Undoubtedly, they were unlicensed. The X-ray device was self-rectifying, with tube voltage of 100 kV and tube current of about 20 mA. One used fluoroscopy device was sent from Bangkok, but it was broken and did not work. We started by sticking lead plates to the walls of the X-ray room (Figure 7). There were problems such as the X-ray localizer not lighting up and the X-ray collimator not working, but we managed to handle the contingency and take matters into our own hands. The film was tank-developed. It was hot and humid. The developer was old and the film was not stored well. Although the images were not satisfactory, we were somehow able to interpret them. The quality of medical care can change dramatically depending on whether or not we have an X-ray. I worked with the pure intention to help these people who had experienced terrible things as refugees (Figure 8).

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Figure 6. ***Ban Kaen Camp*** *was located the west of Sa Kaeo City. The medical care at Ban Kaen Camp was handled only by the JICA team.*

Figure 7. ***Construction of the radiography room;*** *three refugee helpers and I constructed many lead plates for the radiography room ourselves.*

Figure 8. ***Prosthetic limb section for people who lost legs due to landmines;*** *the man looked ecstatic to receive a new prosthetic limb.*

Japan Medical Center

The Japan Medical Center (JMC) was located the west of Sa Kaeo City. It was a facility built for our JICA team, and had wards, a consultation room, an operating room, an examination room, an X-ray room, and accommodation for the JICA team (Figure 9). There was also a mobile bus for chest examinations provided by Japan. The X-ray equipment included a Shimadzu self-rectifying device and a fixed focus X-ray tube, with a tube voltage of 100 kV and a tube current of 20 mA. Because the tube current was small, it took 1 to 2 seconds to take a chest image and 3 to 4 seconds to take an abdominal image (Figure 10). The exposure time was set by a clockwork mechanism. Therefore, the first Thai and Khmer words I learned were "Take a breath and hold it," "Don't move," and "Finish."

The Japan Medical Center had a room for X-ray, but no darkroom for film development. The person previously in charge seemed to have developed the images in the shower room, but it was very difficult to use. Therefore, I created a new darkroom by using the space next to the JICA coordinator's office. Films were developed in a tray. It was from December to March in Thailand, so there were days when the temperature exceeded 40 degrees and the development temperature exceeded the target of 33 degrees. Therefore, I devised a way to double the developing tray and running water on the outside tray. After that, since it was a manual development, the film density could be roughly adjusted by the development time. Today's radiological technologists are not trained this way, but at the time, Japanese radiological technologist schools were even trained in the film development method. This knowledge was very useful at the refugee camp. At the Japan Medical Center, we also took intraoperative X-rays of patients transported from the refugee camp. For intraoperative radiography, A colleague from JICA, who was about the same height as I am, and I carried a long pole and hung the X-ray tube in the center to take X-ray images. Most of the patients had metal pieces removed from landmine explosions. There were also other diseases. Figure 11 shows the upper gastrointestinal (UGI) imaging being taken. There was no fluoroscopy device, so it was a ‘blind’ UGI. I took the images while imagining the anatomy of the stomach and the position of the contrast agent.

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Figure 9. ***Japan Medical Center (JMC)*** *was located in the west of Sa Kaeo City. It was the base and accommodation for the JICA team as well as functioned as a hospital. Hospitalization, surgery, various examinations, and X-rays were possible. This facility is currently used as a malaria research facility in Thailand.*

Figure 10. ***X-ray control device;*** *tube voltage was 100kV; tube current was 20mA, and the exposure time was 0.1 to 10 seconds.*

Figure 11. ***Taking upper gastrointestinal (UGI) X-ray;*** *the patient lay on the floor to keep the distance between the X-ray tube and the film. The UGI was performed blind. I am wearing a protective apron.*

Crown Prince Hospital in Sa Kaeo City

In Sa Kaeo City, where the Japan Medical Center was located, there was a Thai hospital called Crown Prince Hospital (Figure 12). In addition to refugee relief medical activities, the JICA team also provided medical cooperation to Crown Prince Hospital. They accompanied local medical activities outside the hospital. Chest examinations were performed using a chest X-ray examination vehicle at the Japan Medical Center (Figure 13). The examination vehicle used indirect photography with an image intensifier (I.I.). Images were taken on a 100 mm wide roll film which were then developed at the hospital.

In 1980, CT was introduced in Japan and digitalization of images began, but when I asked a radiologist at Crown Prince Hospital at the time what he needed, the answer was he wanted a stabilized power supply rather than a CT. At that time in Thailand, there was a problem of large voltage fluctuations, which made it difficult to perform stable X-ray photography.

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Figure 12. ***Crown Prince Hospital in Sa Kaeo City;*** *this is a hospital, not a safari park.*

Figure 13. *Local mobile screening by X-ray bus provided by Japan.*

45 years have passed

I worked on refugee relief activities on the Thailand-Cambodia border from 1980 to 1981. After that, in 2000, I took part in establishing a medical physics department at the request of Dr. Anchali Krisanachinda from Chulalongkorn University in Bangkok. After that, I visited Chulalongkorn University and Prince of Songkla University and was involved in educating radiological technologists and medical physicists.

In 2024, I revisited Aranyaprathet, Sa Kaeo City and Khao I Dang on the Thailand-Cambodia border for the first time in 45 years. The Khao I Dang refugee camp, where more than 160,000 refugees lived, had become a quiet wilderness with no one around. Aranyaprathet and Sa Kaeo had been transformed into new towns. A new building was constructed at Crown Prince Hospital (Figure 14). The Japan Medical Center had become a Thai malaria research facility. It really felt like a dream to be back after 45 years.

Figure 14. ***Crown Prince Hospital 45 years later;*** *the safari park hospital has been transformed into a modern hospital.*

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My activities in Thailand and Asia

Currently, I am conducting education and research on CT in Japan. Also, in Southeast Asia, mainly in Thailand, I am promoting radiation education, including CT. Society has prominently changed since the time of the Indochina refugees. The development of radiological technology is ongoing. We, radiologists around the globe, remain active and it is important that medical staff in many countries cooperate and develop alongside one another. I aspire to continue to contribute, for the sake of people's sustainable happiness.

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