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A Preliminary Anthropological Analyses of the Casualties from the Korean War during the Year 2000–2001 Excavation

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Abstract : In commemoration of the 50th anniversary since the Korean War, Korean government has initiated a four-year project beginning from the year 2000 to 2003 to excavate the remains of soldier casualties from the Korean War. During the year 2000–2001 excavation total 555 casualties (minimum number of individual; MNI) are discovered around the southern parts of Korean peninsula.

On the basis of the bone remains anthropological researches including the determination of sex, the estimation of age and stature have been carried out.

All casualties are determined as male mainly based on the characteristic features of the innominate bone of the pelvis.

Estimation of age is gained from 313 individuals. Over 64% of the casualties were estimated between the age 20–24 years old and almost 20% were between the age 15–19 years old. From these data, it has been conformed that the majority of soldiers can be classified as being in a young age category

Total 270 individuals are examined for estimation of statures. Approximately 68% of the findings were estimated to have been between the height 160–170 cm in proportion, and almost 14% of findings were below 160 cm tall.

Identifying the remains of casualties are carried out by uncovered belongings, taking note of eyewitness accounts, and applying scientific methods. A total of 34 individual names were identified, and among them only four soldiers have been confirmed. 27 are still in the process of verification, and the rest are nearly impossible to identify.

Key words : Casualties, MNI, Determination of sex, Estimation of age and stature, Identification

Introduction

The Korean War lasted from the 25th of June 1950, until the 27th of July 1953. During the war, nearly 3 million civilians and 500 thousands of Korean and Unite Nation soldiers were reportedly deceased in combat. Currently, over 100 thousand Korean soldiers are still not uncovered and/or missing .

In commemoration of the 50th anniversary since the Korean War, the Korean government has initiated a four-year project beginning from the year 2000 to 2003, to excavate the remains of soldier casualties from the war. This project is a preliminary anthropological research on the first comprehensive excavation research of casualties from the Korean War (Park *et al*. 2000, 2001).

The purpose of this paper is to describe the anthropological reconstruction of individuals, including the calculation of MNI, the estimation of age, sex and stature, based on the biological profiles of bone remains during the year 2000–2001 excavation. Presentation of methods used to identify the individuals and differentiation of our military forces from the enemy military forces is another goal of this paper.

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Materials and Methods

The main goal of anthropological research is to find the individual's anatomical characteristics using metric and non-metric methods. For the metric examination, special devices including sliding and spreading calipers, etc. are used and every characteristic is recorded in detail on separate charts. Martin's methods are used for the measurements of the bones (Martin 1928). All measurements are calculated in millimeter.

All identified bone remains are used for the calculation of the Minimum Number of Individual (Grayson 1984, Klein and Cruz-Uribe 1984, Lyman 1985).

On the basis of the biological profiles of bone remains, anthropological reconstruction including estimation of individuals sex, age and stature have been examined (Simon 1998).

For the determination of sex, characteristic features of the innominate bone of pelvis are used (Anderson 1962, Bass 1987, Ubelaker 1989). To estimate age at deadth, the develpoment of the teeth (Ubelaker 1989), and union of the epiphyses (Flecker 1942, Webb and Suchey 1985) are applied to subadults (under 20 years) while macroscopic methods such as auricular surface of the ilium, cranial suture closes (Meindl and Lovejoy 1957) and dental attrition (Miles 1963) are used for adults. To estimate stature of casualties formulas for asian males provided by Trotter are applied (Trotter 1970). The maximum length of long bones is measured in centimeter and was obtained using an osteometric board.

Results

1. Anthropological Examination

1) Calculation of MNI

NISP and MNI are the quantitative units most commonly encountered in the anthropological and zooarchaeological literature (Grayson 1984, Klein and Cruz-Uribe 1984, Lyman 1985). NISP is defined as the number of identified specimens; it is an observational unit. MNI is defined as the minimum number of individual necessary to account for some analytically specified set of identified specimens[1)].

Based on number of identified specimen (NISP: Fig. 1), during the first year excavation, MNI is calculated as 344, and in the second year MNI is calculated as 211; hence, 555 soldier's remains have been discovered during our two-year excavations.

2) Determination of Sex

All individual remains are determined as male based on the characteristic features of the innominate bone of pelvis. Structural differences of pelvis including sciatic notch, auricular surface and preauricular sulcus are used. The characteristic features of sacrum are also provided to determine the sex.

3) Estimation of age at deadth

For the estimation of age, dental eruption and attrition of molar teeth, closure of cranial sutures, and union of diaphysis and epiphysis of long bones have been examined.

Table 1. Number of identified specimen of casualties during the year 2000-2001 excavation

	Total		Total
Cranium	197	Ulna	376
Mandible	165	Innominate	274
Manubrium	9	Sternum	10
Atlas	56	Femur	428
Axis	59	Patella	84
Sacrum	65	Tibia	451
Clavicle	302	Fibula	330
Scapula	285	Talus	224
Humerus	433	Calcaneus	216
Radius	376		
Total	1947	Total	2393

[1)]It is important to understand that MNI traditionally means the minimum number of individuals necessary to account for all the kinds of skeletal elements found the skeleton of a taxon, the humerus, femur, and scapula, etc.

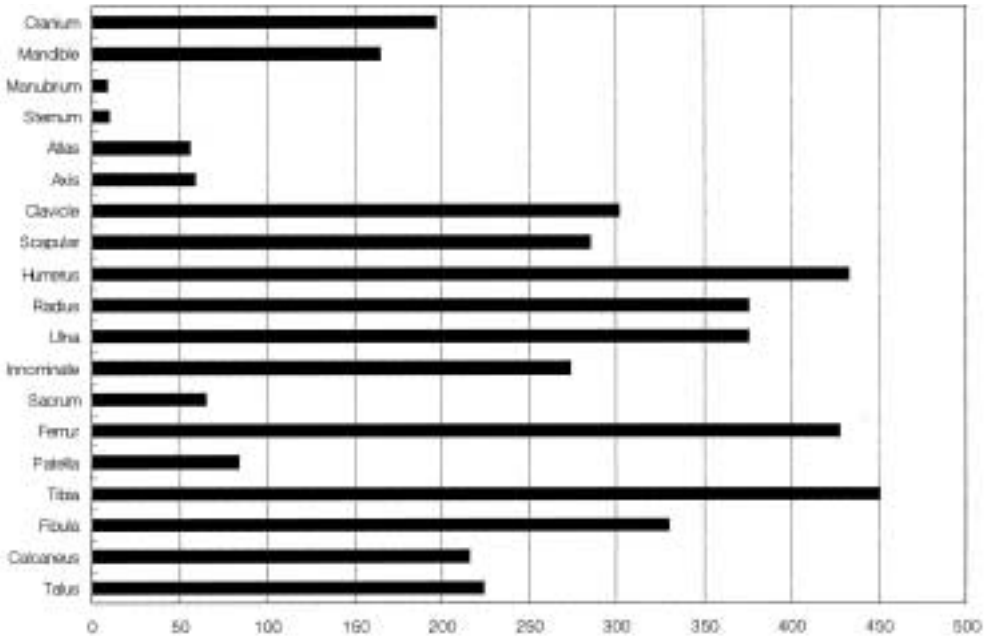

Fig. 1. NISP of casualties from the year 2000–2001 excavation.

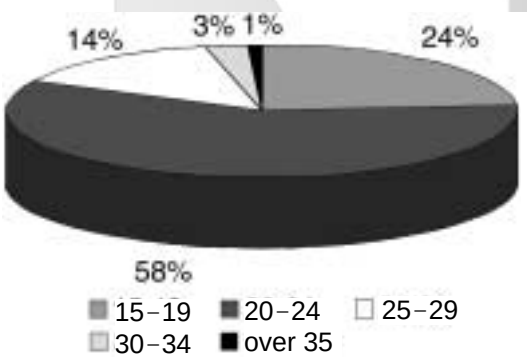

Fig. 2. Frequencies of age estimation of casualties.

Estimation of age is gained from 313 individuals. After examining the characteristic features, over 64% of the casualties were estimated between the age 20–24 years old and almost 20% were between the age 15–19 years old. From these data, it has been conformed that the majority of soldiers can be classified as being in a young age category (Fig. 2).

Table 2. Distribution of estimating age of casualties

AGE	15–19	20–24	25–29	30–34	over 35	Total
Total No.	75	183	44	8	3	313

4) Estimation of stature

The estimation of stature for asian males has also been calculated using the Trotto's formula[2]. Especially, femur is the most reliable skeletal part for the estimation of height reconstruction.

Total 270 individuals are examined for estimation of statures. Approximately 68% of the findings were estimated to have been between the height 160–170 cm (in detail, 35% of findings were between 160–165 cm and 33% of findings were between 166–170 cm in

[2]Equations by Trotter (1970) are developed after studying approximately 850 documented male and female skeletons in the Terry Collection in the National Museum of Natural History and about 4100 males killed during the Korean War and World War II.

Table 3. Distribution of estimating stature of casualties

Stature	under 155.0	155.1 −160.0	160.1 −165.0	165.1 −170.0	over 170.1	Total
Total	12	37	103	86	32	270

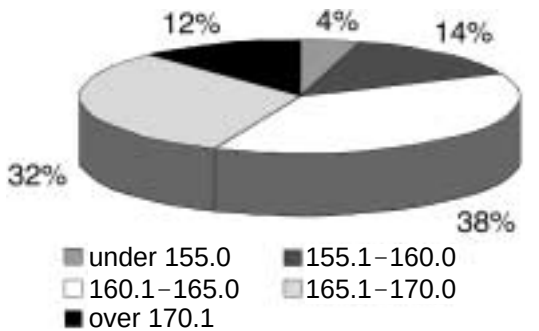

Fig. 3. Frequencies of stature estimation of casualties.

height) in proportion, and almost 14% of findings were below 160 cm tall (Fig. 3).

5) Other Anthropological Researches

Based on the non-metric characteristics of individual remains, some important anthropological analyses can be carried out. For examples, in case of cranial bones, the frequencies of some traits such as appearances of metopic suture (Torgensen, 1951), wormian bone (Hess 1946, Bennett 1965, EL-Najjar and Dawson 1977), inca bone (Brothwell 1981), carabelli's cusp and protostylid appearances in molar teeth (Dahlberg 1950) are appeared in low frequiences. Those kinds of traits are also shown almost same low appearances in modern Korean (Baek *et al*. 1999, Choi and Han 1999).

2. Identification, Verification and Differentiation of Casualties

Identifying the remains of casualties from the Korean War is one of the most important works of our excavation project. By examining uncovered belongings, taking note of eyewitness accounts, and applying scientific methods (Superimpose and DNA analysis methods, etc.), several casualties were identified. A total of 34 individual names were identified, and among them only four soldiers have been confirmed. 27 are still in the process of verification, and the rest are nearly impossible to identify. These four individuals are now buried at the National Cemetery in South Korea. To further verify their kin, a DNA analysis has been initiated.

When excavating the remains of casualties, we analyzed personal belongs, types of weaponry that were discovered on site, and took into consideration topographical conditions to help differentiate our military forces from enemy military forces. This standard was used as a comparative devise to help differentiate the origin of the remains. However, when the remains and belongs of both our military forces and enemy military forces were discovered in an inter-mixed situation, we temporarily classified the findings as part of our military.

Discussion

During the year 2000-2001 excavation total 555 casualties are discovered around the southern parts of Korean peninsula.

On the basis of the bones remains anthropological researches including the sex, the estimation of age and stature have been calculated.

All casualties are determined as male mainly based on the characteristic features of the innominate bone of the pelvis.

Estimation of age is gained from 313 individuals. Over 64% of the casualties were estimated between the age 20-24 years old and almost 20% were between the age 15-19 years old. From these data, it has been conformed that the majority of soldiers can be classified as being in a young age category

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Identifying the remains of casualties are carried out by uncovered belongings, taking note of eyewitness accounts, and applying scientific methods. A total of 34 individual names were identified, and among them only four soldiers have been confirmed. 27 are still in the process of verification, and the rest are nearly impossible to identify.

In addition, this excavation project will end in the year 2003, but up to now over 100,000 soldier casualties are still not uncovered. Therefore, it is absolutely necessary for this project to continue and help further study in the related scientific field. For that reason a formal organization supporting by government must be founded as soon as possible.

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2000~2001년도 6.25 전사유해발굴에 관한 체질인류학적조사

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충북대학교 고고미술사학과, 중원문화연구소 유해발굴센터

정부는 6.25 전쟁 50주년 기념사업의 하나로 2000년부터 2003년까지 6.25 전쟁 당시 전사하였으나 유해를 찾지 못한 전사자의 유해를 발굴 조사하는 계획을 수립하였다. 육군발굴단과 충북대학교 중원문화연구소 유해발굴센터는 2000~2001년도에 모두 555구(최소개체)의 유해를 발굴하였다.

발굴된 유해들에 대한 인류학적 조사를 실시하여 나이와 키 및 개인적인 특징을 찾아 전쟁을 수행한 일정 집단의 체질적인 특징을 찾고자 하였다.

발굴된 전사자는 모두 남성이며, 전사자의 나이는 313 개체 중 20~24세가 전사자의 60% 이상을 차지하였으며 15~19세에 속하는 전사자의 빈도가 일정 지역에서 20% 정도 나타나 개전 초에 어린 소년병들이 전쟁에 참가했음을 알 수 있었다. 전사자의 키는 270개체에서 조사되어 이 중 60% 이상이 160~170 cm 범주에, 14% 정도가 160 cm보다 작은 것으로 관찰되었다. 비계측적인 특징이 관찰되어 50년 전 일정집단의 체질적 특징을 이해하는 기초가 되었다.

발굴된 유해를 아군과 적군은 출토된 유품과 지형적 상황, 그리고 문헌 등을 종합하여 식별하였으며 이름이 알려진 34개체 중 4개체만이 확인되었을 뿐이다.

찾아보기 낱말 : 유해, 최소개체, 남녀판별, 나이와 키 가늠하기, 식별