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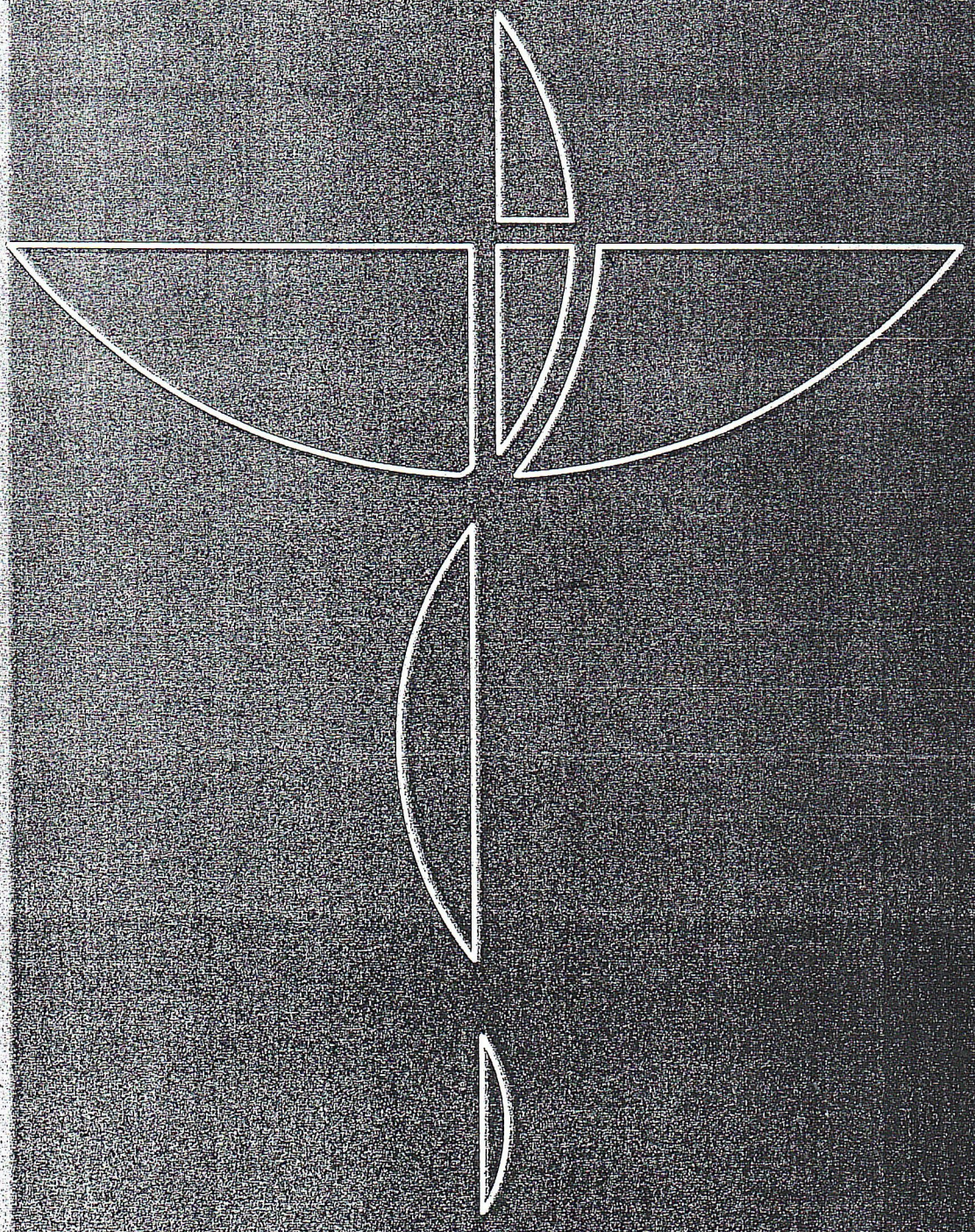

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STEPS IN PROCESS OF IDENTIFICATION OF SKELETONISED CORPSES CASE REPORT

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Abstract:

When clearing the debris and litter from the bottom of the elevator space, 5m deep, in an unfinished building in the center of Skopje, human bones were found. Institute of Forensic Medicine was informed and two forensic medicine specialists supervised the emptying of the space in order to find all of the bones and assemble two skeletons. The skeletonised corpses had clothes on, and personal documents were found with one of the corpses.

Transporting of the two bodies to the Institute of Forensic Medicine was followed by identification procedures for determining the sex, age, height, estimate of time since death, reason for death and persons' identity.

The sex was determined on the basis of characteristics of the cranium, pelvic and femoral bones. The height was calculated by the length of the long bones and the age was determined on the basis of the dental status, joining of epiphysis with diaphysis of the long bones, and fusing of skull's sutures.

Cause of death with both persons was determined by analysing bone injuries. Estimating the time of death was major problem because the bodies have suffered long time exposure to various ambient conditions (different ambient temperature, water, fire). To determine the identity of the persons DNA analysis of persons' teeth was done.

It was determined that one of the skeletons was male, and the second skeleton is female. Both persons died as a result of head trauma caused by blunt force.

Key words: identification, sex, age, DNA analysis

ИДЕНТИФИКАЦИЈА НА СКЕЛЕТИЗИРАНИ ТЕЛА - ПРИКАЗ НА СЛУЧАЈ

Апстракт:

При обид да се испразни од градежен шут и ѓубре долниот дел од просторот за лифт, длабок 5 метри, во недоградена зграда во центарот на Скопје,пронајдени се човечки коски. Повикан е Институтот за судска медицина и двајца специјалисти по судска медицина го надгледуваа празнењето на просторот со цел да се пронајдат сите коски и да се комплетираат двата скелета. Скелетизираните тела беа со облека, а кај едното од нив беа пронајдени лични документи.

Во Институтот за судска медицина превземени се идентификациони постапки за одредување на пол, возраст, висина, поминато време од моментот на настапување на смртта, причина за смрт и одредување на идентитет на лицата.

Полот се одреди врз основа на карактеристиките на черепот, карличните и надколеничните коски. Висината се пресмета со помош на должината на

долгите коски, а возраст се одреди врз основа на забниот статус, спојување на епифиза со дијафиза на долгите коски и сраснувањето на шавовите на черепот. Причината на смртта кај двете лица се утврди со анализа на повредите на коските. Одредувањето на времето на настапување на смртта беше голем проблем од причина што телата биле изложени подолг период на различни амбиентални услови (различна амбиентална температуре, вода, оган). За утврдување на идентитетот на лицата се изработи ДНА анализа од забите на двете лица.
Се утврди дека едниот скелет е од машки пол, а вториот скелет е од женски пол. Двете лица се починати како резултат на траума на главата, односно скршување на коските на главата со делување на тапотврда сила.
Клучни зборови: идентификација, пол, возраст, ДНА анализа

Introduction

The identification of found persons' of unknown identity is a process lead by a forensic medical expert. Identification starts with detailed description of the clothes and objects found in the clothes, description of jewelry, and is followed by description of personal features of the body. If the corpse is preserved, and according to the description and features it matches the reported missing person, it is shown to a family member for identification. Then it is proceeded to taking photos and autopsy. Identification procedure is most difficult to be done on corpses with major decay changes or on skeletonised corpses. (1)
When clearing the debris and litter from the bottom of the elevator space, 5m deep, in an unfinished building in the center of Skopje, human bones were found. According to available data from investigating authorities, there were 2-3 fires broken out in this space and interventions by the fire-fighting service(Figure 1). Institute of Forensic Medicine was informed and two forensic medicine specialists supervised the emptying of the space in order to find all of the bones.

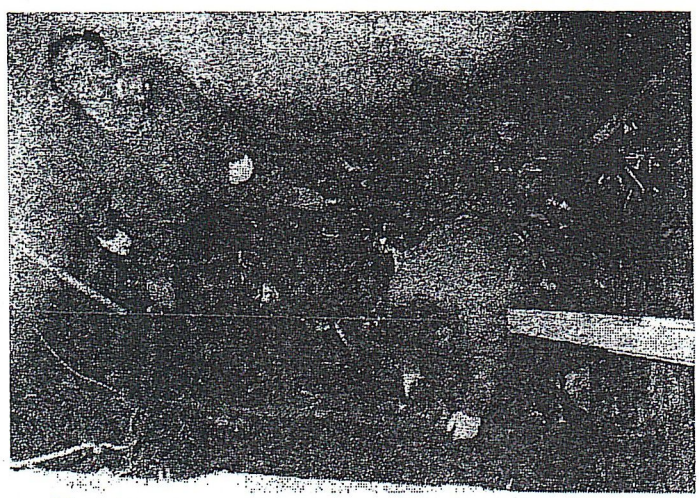

Figure 1 **Elevator space**

Material and methods

Two skeletons were assembled, some hand and foot bones missing. Skeletonised bodies were with clothes, and with one of them personal documents were found.
The sex was determined on the basis of characteristics of the cranium, pelvic and femoral bones.
The height was calculated by measuring the length of the femur, tibia, humerus and radius. Vallois formula was applied to calculate the height on the basis of each individual bone, determining the arithmetical mean value.(2)
The age was determined by analysis of the dental status, joining of epiphysis with diaphysis of the long bones, and fusing of skull's sutures.(3,4)

Results

Skeleton No. 1.

Scull: arcus supraorbitalis - rounded, poorly outlined arcs; fossa orbitalis - rhomboid form with obtuse angles; mandibula - weight 87 gr, flat chin; scull base - length 100 mm; Pelvis: incisura ishiadica – narrow and deep; acetabulum d=55 mm; foramen obturatum-oval; Femur: neck angle 132°; caput femoris d=50 mm; bicondylar width - 80 mm. The analysis revealed that the skeleton is male. (Figure 2)

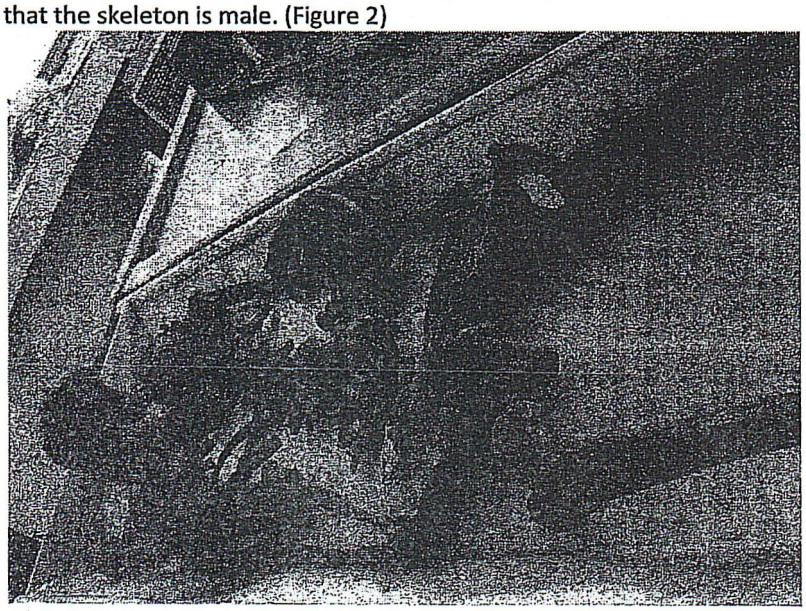

Figure 2 Skeleton No. 1

Bone length: Femur - 46 cm, tibia – 40 cm, humerus – 31,8 cm, radius – 24 cm. Arithmetical mean of calculated length by Vallois formula – 169 cm.
Analysis of the teeth: On the right side of the lower jaw, all (eight) teeth are there, on the left side there are teeth from the third to the seventh, and at the place of the first and second tooth there are well shaped tooth pits. On the right side of the upper jaw there are the fourth, fifth, sixth and seventh tooth, first three are missing, with well shaped tooth pits of the first and third tooth in place. On the left side of the upper jaw the fourth, fifth,

seventh and eighth tooth are in place, and tooth pits exist at the places of the first, second and third tooth (Figure 3).

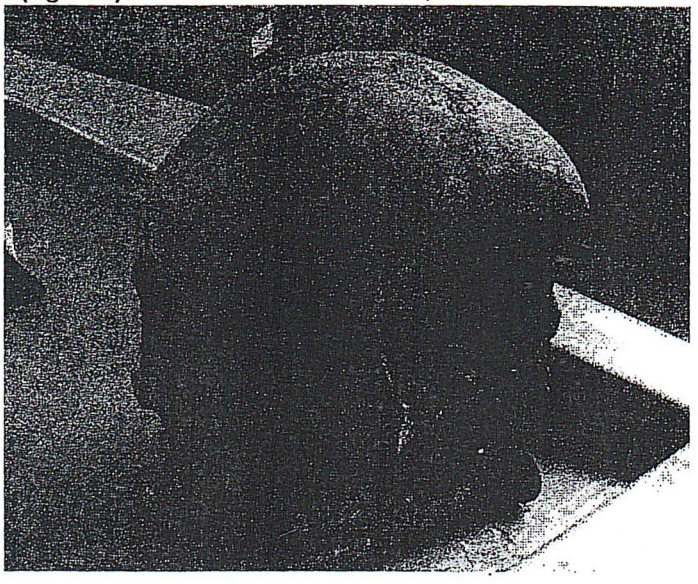

Figure 3 Teeth of the upper jaw- scull No. 1

Scull analysis: scull sutures were not fused (synostosis), scull is not complete, part of the temple bone and part of the top-of-head bone are missing on the left side. Part of the temple bone and part of the rear head bone are missing on the right side. Bones in these parts are blackened, burned. (Figure 4)

The analysis of the teeth and scull's sutures point to a young person, at the age between 25-35 years.

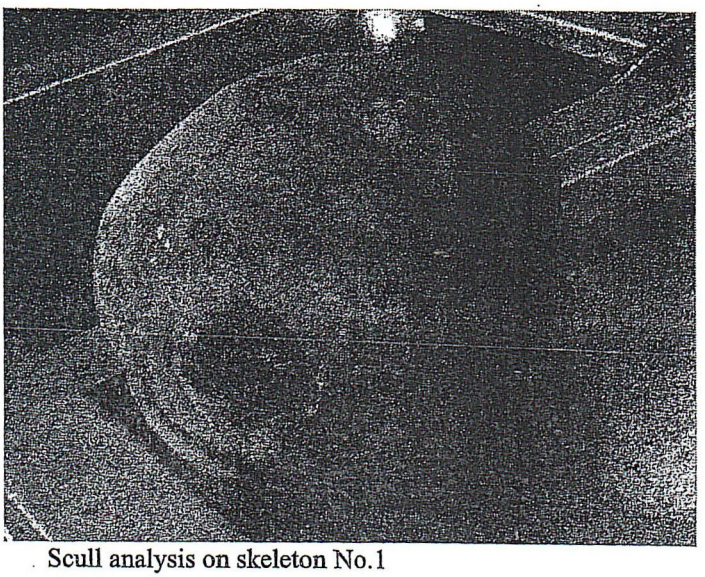

Figure 4 Scull analysis on skeleton No.1

Skeleton No. 2.

Scull: arcus supraorbitalis - poorly outlined arcs; fossa orbitalis – round shape with sharp edges; mandibula – weight 59 gr, pointy chin; scull base - length 90 mm; Pelvis: incisura ishiadica – wide and shallow; acetabulum d=46 mm; foramen obturatum - triangular; Femur: neck angle 120°; caput femoris d=40 mm; bicondylar width - 72 mm. The analysis revealed that the skeleton is female.(Figure 5)

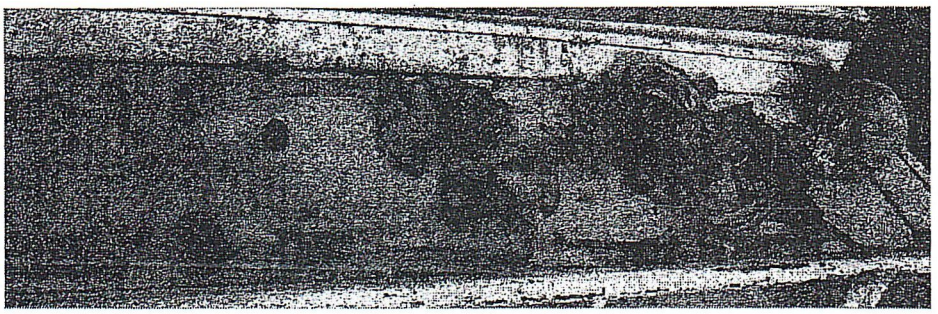

Figure 5 Skeleton No. 2

Bone length: Femur – 38 cm, tibia – 34 cm, humerus - 29 cm, radius – 20 cm. Arithmetical mean of calculated length by Vallois formula – 150 cm.

Analysis of the teeth: On the right side of the lower jaw, the teeth from the second to the seventh are in place, on the left side the teeth from the first to the seventh are in place. Teeth in place on the upper jaw on the right side are the first, fifth, sixth and seventh, and on the left side the second, third, fifth, sixth and seventh tooth are in place. At the places of the missing teeth there are tooth pits. (Figure 6)

Figure 6 Analysis of the teeth, Scull no.2

Analysis of the scull and long bones: Scull's sutures are not fused. There is no joining of epiphysis with diaphysis of the long bones.
The analysis of the teeth, scull's sutures, and in particular of the long bones where epiphysis is not joined with the diaphysis points to a person at the age between 14-17 years.

Determining the cause of death
Bone fractures have been identified at both sculls. On the male scull a round fracture was identified around the foramen magnum (Figure 7), whereas on the female scull the facture was more fragmented on the right side of the frontal bone, the orbit, zigomatic bone, upper jaw bone and nose bones (Figure 8). Injuries are caused by blunt force.(5)

Figure 7 Bone fractures – scull No. 1

Figure 8 Bone fractures- scull No. 2

Estimating the time of death
Bones of both skeletons are in the same condition, without presence of soft tissues, cartilages and tendons, greasy and heavy. Taken into consideration that they have been exposed to various conditions, i.e. to dry conditions, to water and to heat from fire, it can be concluded that the time of death was 3-5 years ago.(6)
Determining persons' identity
Teeth from both bodies were taken for DNA analysis. Comparing the DNA profile of the male skeleton with the profile of his father, who reported his son missing 5 years ago, the identity of the male person was determined.
The female person has still not been identified because there is no person of this age reported missing.(7)

Discussion

Process of identification of skeletonised corpses is performed in several steps by determining the common features of an unknown person, as are the sex, age and height and main objective is to determine person's identity, time of death and the cause of death. Determining the identity depends on the data obtained for the missing persons, so called antemortem data, collected by the police, i.e. the Department for Search of Missing Persons. Those data are often insufficient because family members do not remember or cannot describe the clothes, jewelry, tooth condition and some other important data such as previous bone injuries and fractures. It is particularly important to have the dental record which contains the complete dental status (data on teeth extracted, fixed, and fixed or mobile dentures).(5,7)

In presented cases, the analysis of the skeleton status has provided sufficient data for determining the sex, age, height, time since death and cause of death. Positive identification with DNA analysis was performed for the first skeleton, whereas the identity of the second skeleton remains unknown, i.e. there is not missing female person reported in the Department for Missing Persons at the age between 14-17 years. Further attempts for determining the identity of the female person depend on information which can be obtained by detailed investigation of this case which is in jurisdiction of the police.

Conclusion

Identification procedure has proven the following: One of the skeletons is male, age between 25-35, height around 170 cm, died 3-5 years ago. The identification made with DNA analysis revealed that the person was at the age of 33, and disappeared 5 years ago. The other skeleton is female, at the age of 14-17, height about 150 cm, identity still undetermined. Investigation for this case is not closed yet.

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