

A Sharp Force Trauma Related Possible Homicide in Ancient Anatolia: Analytical Research

Antik Anadolu'da Keskin Alet Yaralanması Sonucu Oluşan Muhtemel Bir Cinayet: Analitik Araştırma

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ABSTRACT Objective: Trauma analysis is one of intriguing parts of osteoarchaeological studies. It reveals important information about the lifestyle of the ancient humans and in some cases the reason of the deaths. During the 2019 excavation season, a well-preserved and almost intact human skeleton was found in Northern Colonnaded Street of the Stratonikeia ancient city. This study presents the characteristics of the wound on this individual and discusses the possible reason and the way of the death. **Material and Methods:** The material consists of a nearly complete skeleton dating to 1086-1219 calCE by radiocarbon dating. The skeleton -whose age and sex were determined by using cranium, mandible, os coxae, clavicle and femur- belongs to a 20-25 years old male. The whole skeleton was examined for the presence of trauma and other pathological conditions which described in literature. **Results:** Located on occipital bone, there is a large lesion (height: 43.53 mm, width: 61.42 mm) which shows an evident of sharp force trauma without having any signs of healing. The evidence indicates a sudden death which was caused by a large bladed instrument. **Conclusion:** Given the size and characteristics of the trauma, it is likely that the incident is a result of intra-group violence rather than inter-group violence and thus interpreted as a homicide.

Keywords: Stratonikeia; sharp force trauma; paleopathology; ancient homicide

ÖZET Amaç: Travma analizleri, osteoarkeolojik çalışmaların en ilgi çekici yanlarından birisidir. Bu çalışmalar, antik dönem insanların yaşayışlar ve bazı durumlarda ölüm sebepleri hakkında bilgileri açığa çıkarır. Stratonikeia Antik Kenti'nde yer alan Kuzey Sütunlu Cadde'de 2019 yılında gerçekleştirilen kazılarda, neredeyse bütün hâlinde çok iyi korunmuş bir insan iskeleti bulundu. Bu çalışma; yarının özelliklerini, ölümün nedenini ve nasıl meydana geldiğini ortaya koymaktadır. **Gereç ve Yöntemler:** Radyokarbon tarihlendirme yöntemi ile 1086-1219 calCE arasına tarihlendirilen iskelet 20-25 yaşlarında erkek bir bireye aittir. Bireyin yaş ve cinsiyeti; kafatası, mandibular, koksigs, klavikula ve femur üzerinden belirlenmiştir. Bireyin bütün iskeleti üzerinde, literatürde tanımlanmış patolojik durumların varlığına yönelik detaylı bir inceleme gerçekleştirilmiştir. **Bulgular:** Oksipital kemik üzerinde, iyileşme izi bulunmayan ve kesici bir alet ile yapılmış olan büyük bir lezyon (yükseklik: 43,53 mm, genişlik: 61,42 mm) tespit edildi. Kanıtlar, büyük bir kesici alet ile açılan bu yarının ani bir ölüme yol açtığını göstermektedir. **Sonuç:** Travmanın ebadı ve özellikleri, bu yarının grup içi bir şiddet sonucu ortaya çıktığını ve bu yüzden cinayet olarak sınıflandırılması gerektiği ihtimalini ön plana getirmektedir.

Anahtar Kelimeler: Stratonikeia; kesici alet travması; paleopatoloji; antik cinayet

Trauma analysis is one of intriguing parts of osteoarchaeological studies. Regarding the nature of bones, it is not always easy to determine the context of the death comparing soft tissue traumas. Sharp force trauma is an important type of trauma in ancient times which relates to intra and inter-group violence. The most important questions are the timing of the trauma and the type of the instrument. Answering the

first question, whether the trauma is ante-mortem, peri-mortem or post-mortem, is relatively easy compared to determining the type of the instrument which causes the trauma. Several studies examining sharp force trauma on the macroscopic and microscopic level have been conducted in order to develop criteria for differentiating instrument marks on bone.¹⁻¹¹ However, most of the studies focused on the embed-

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ding blows to the bones rather than sliced bones. Nevertheless, characteristics of the cut marks provide useful information for the cases which bones are sliced off.

With its rich archaeological background, Anatolia plays an important role in osteoarchaeological studies worldwide. Numerous osteological studies have been conducted on human remains from Paleolithic to early modern times.^{12,13}

Despite this richness of osteological publication, little work has been done focusing solely on trauma analysis on osteoarchaeological material and most of the trauma related cases were mentioned in paleodemographic studies.¹⁴⁻²¹

In this study, we present a sharp-force-related injury on an occipital bone of an individual from ancient Anatolia. We aim to determine the cause and way of manner.

THE SITE

Stratonikeia is one of the ancient cities of inland Karia in Asia Minor (neighbour of Eskişehir, Yatağan district, Muğla Province) (Figure 1). The Yatağan-Milas highway passes close to the northern edge of the ancient city.

Since 2008, on behalf of the Ministry of Culture and Tourism and Pamukkale University, archaeological excavations, conservation, and restoration works in Stratonikeia are carried out by a team under the direction of Bilal Söğüt. The oldest finds uncovered in Stratonikeia belong to the Early Bronze Age. The vast majority of standing remains, however, are dated to the Archaic and later periods. The city walls, gates, agoras, gymnasium, theatre, temple, bouleuterion, baths, latrinas, colonnaded streets, and a necropolis found in the settlement dated to the Archaic, Classical, Hellenistic, and Roman periods. Beside these; churches, houses, colonnaded streets, arches, and necropolis dating back to the Byzantine Period, as well as village squares, stone paved roads, Turkish baths, mosques, mansions, houses, a paint workshop, a bread oven, shops of various crafts, and cemeteries from the periods of the Anatolian Principalities, the Ottomans, and the Republic were found in the same area. Here, the remains from ancient times to the



FIGURE 1: Location of the site.²²

present can be seen side by side. For this reason, Stratonikeia has been taken under protection as a living historical city with residents.

GRAVE (19SKCM01)

The grave is located in the Northern Colonnaded Street of the city. The street begins from the south mid-section of the open area in front of the northern city gate and continues towards the city centre.

The grave was found on the east side of the open area in front of the northern city gate (Figure 2). The grave is a tile type and the capstone is missing. The grave includes one individual lying in a dorsal position (East-West axis) without any kind of grave good (Figure 3).

MATERIAL AND METHODS

The material consists of a nearly complete skeleton of an individual which was unearthed in the 2019 excavation season. A radiocarbon (C14) analysis was performed and provided a date of 1086-1219 calCE for the skeleton. Sex determination and age of death estimation were done through morphological analysis of cranium (glabella, processus mastoideus, processus zygomaticus, tuber frontalia and parietalia, inclination of frontal, orbital form, supra orbital margin, sutural obliteration, craniofacial morphology), mandible (total aspect, mandibular angle, margo inferior, dental wear), os coxae (auricular surface, incisura ischiadica major, angulus pubis, arc compose, foramen obturatum, corpus ossis ischii, crista iliaca, fossa iliaca, pelvis major, pelvis minor and subpubic angle), clavicle (medial

epiphysis and cortical index) and femur (proximal end).²³⁻³¹ Stature for this individual was calculated by the formulas from Pearson, Trotter and Glesser and Sağır using left femur, and then averaged of them was taken into account (*Sağır M. Uzun kemiklerin radyografilerinden boy formülü hesaplaması. [Unpublished PhD Thesis]. Ankara: Ankara University; 2000. [2021].*).^{32,33} Finally, the whole skeleton was examined for the presence of trauma and other pathological conditions which described in literature.³⁴

RESULTS

The majority of the skeletal elements of this individual were preserved and thus sex determination and age estimation were able to be done with a high confidence. The individual is a 20-25-year-old male. Since the long bones are available and intact, the stature could be measured as around 167 cm. Muscle

insertion sites are marked on long bones which indicates a muscular body.

After determining, main features of the individual, the skeleton was examined for pathological lesions. Three hand distal phalanges have arthritis.

Four lumbar vertebrae have severe Schmorl's nodes (The whole vertebral column is available). If we consider these Schmorl's nodes in combination with the muscular body of the individual, it's possible this individual experienced a life of hard labour.

On the right side of occipital bone, starting just below of lambdoid suture, a rectangular shaped lesion is visible (height: 43.53 mm, width: 61.42 mm) (Figure 4). The linear and clean-cut superior edge extends to the right edge of the wound, whereas the left edge has a cancellous surface. A polished appearance is clearly visible on superior edge. At the uppermost point, there is horizontal flaking. There is no sign of healing. The



FIGURE 2: The map of the Northern Colonnaded Street of the city. The grave is shown in circle (Picture: Excavation Archive).



FIGURE 3: The picture of the grave (Picture: Excavation Archive).



FIGURE 4: Sharpe force trauma related gaping on occipital bone.



FIGURE 5: The lesion covered by sliced piece.

sliced piece is present and refits at the trauma site (height: 42.97 mm, width: 60.84 mm) (Figure 5). The rest of the skeleton does not show any kind of trauma.

DISCUSSION

One of the major problems is distinguishing post-mortem and peri-mortem lesions during trauma analysis. In this case, the possibility for excavation damage on the skeletal remains can be clearly excluded since the material was exhumed by an anthropologist (one of the authors of this study, EHK) with delicate workmanship. On the other hand, taphonomic or environmental factors can be ruled out as a reason for this kind of cut. Furthermore, there is no evidence or logical reason (such as medical experiment) that the bone was cut between the death and burial of the individual.

Considering the cut mark and rupture marks, it is likely that a chopping weapon was used in this case. Due to their heavy structure, they can easily produce this kind of lesion on the bone. A blow from above sliced off a large and almost rectangle piece of occipital bone, which is a characteristic for hatchet defects.¹ Upper edge has a smooth surface, while cancellous layer exposed on the other edges because of the force of the below. This smooth surface and lack of striations eliminates a serrated instrument for this trauma. The size of the lesion also indicates a long instrument.

Although we cannot clearly identify the instrument in question, given the size and characteristics of the trauma, it is likely that the blow was made by a large bladed instrument, such as sword or machete.

The size of the lesion indicates massive damage to the brain and vessels, resulting an immediate death. According to shape of the lesion, it can be concluded that the blow come from above and sliced the bone instead of embedding into it.

Although there are no signs of any trauma on the rest of the skull, the absence of facial bones prevents knowing if there is a blow to face or not. But this absence is probably due to post-burial processes.

Considering the location of the injury, it is hard to tell if that the individual was standing up at the time of the blow. Instead, it is more logical to think

about a kneeling or sitting position. This is another important factor that increases the likely of homicide.

Regarding the morphological features of skeleton and the location of trauma, it is likely that the individual was killed as a result of intra-group violence. On the other hand, according to the archaeological record of the city, there was war against Anatolian Principalities in the 12th century. The location and characteristics of the trauma is not typical for a war trauma and the sliced piece was also in grave which does not make sense for a war situation. Furthermore, there is no trauma in the rest of the which is generally seen in war related deaths. Therefore, the context of the death does not clearly fit to a war scenario. We, therefore, are on the side of a homicide for this case.

CONCLUSION

The morphological features of the lesion clearly indicated a sharp force trauma which causes a sudden death of the individual. Although we cannot rule out the war as a reason of death, the possibility of homicide outweighs. With the morphological characteristics (size and shape), this case is one of the most important trauma example in ancient Anatolia and thus it is clear that contributes the literature of ancient traumas in Anatolia.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Ahmet İhsan Aytek, Alper Yener Yavuz, Esra Hilal Kaya; **Design:** Ahmet İhsan Aytek, Alper Yener Yavuz, Esra Hilal Kaya; **Control/Supervision:** Ahmet İhsan Aytek, Alper Yener Yavuz; **Data Collection and/or Processing:** Ahmet

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