A GAMING DIE IN THE HAND OF AN UNFORTUNATE CHILD

Vlasta Vyroubal
Croatian Academy of Sciences and Arts
Anthropological Centre
Ante Kovačića 5
HR – 10000 Zagreb
vyroubal@hazu.hr

Petar Sekulić
Croatian Conservation Institute
Nike Grškovića 23
HR – 10000 Zagreb
psekulic@hrz.hr

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The revision of the archaeological excavations of the Benedictine Abbey of St Michael the Archangel, in Rudina (2018), covered most of the rectangular area in front of the southern annexe of the abbey church. Thirty graves were found in the excavated area, most of which can be dated to the second half of the 15th century and the beginning of the 16th. Remains of a subadult with head injuries indicative of interpersonal violence (who had a bone die in his right hand) were found in grave 43. This grave dates back to the second half of the 15th century and the beginning of the 16th.

Key words:
Rudina, Benedictine Abbey, St Michael the Archangel, late Middle Ages, conservation and restoration work, gaming die, bio-anthropological analysis

Benedictine Abbey, St Michael the Archangel

The Benedictine Abbey of St Michael the Archangel, in Rudina, is located on the southeastern slopes of Psunj (Fig. 1). The abbey was first mentioned in a document of 1250, in the time of King Bela IV, but it is assumed that it was founded by members of the Borić family during the second half of the 12th century. Due to the Ottoman threat, the abbey was abandoned during the second quarter of the 16th century.[1]

In 2013, the Croatian Conservation Institute, in cooperation with the Požega Conservation Department, began a programme of archaeological excavations and the preparation of draft documentation for the remains of the Benedictine abbey in Rudina. This survey created the preconditions for conservation-restoration work with adequate presentation of this exceptional monument of late-medieval cultural heritage.

As part of this work in 2018, an audit archaeological survey of the rectangular area in front of the southern annexe of the abbey church was conducted. It is an area (dimensions 10.9 x 4.85 m), which is delimited to the east by the west façade of the southern annexe next to the abbey church, and to the north by the southern part of its lobby. The wall bounding the subject area to its west and south, with some caution, can be interpreted as a remnant of an external defensive wall, probably built in the late 15th century or early 16th.[2] In addition to the previously known four stone-lined tombs, another 30 graves were excavated in 2018. Most of the excavated graves may have existed before the construction of the external defensive wall.[3]

1 Andrić 2020; Pleše, Mostarčić, Sekulić 2018.

2 Sekulić 2020, 67.

3 Based on the movable finds from the graves, it is possible to make such an assumption (Mostarčić, Sekulić 2019, 126).

FIGURE 1. Location of the site (made by P. Sekulić).

Grave 43 was documented in the south-eastern part of the area excavated in 2018 (Fig. 2). The grave was properly oriented (head to the west, feet to the east), partially preserved, arms stretched along the body and undisturbed by later burials (Fig. 3). A bone die (PN 027) was found in the right hand (Fig. 4), and a fragment of a poorly preserved iron hoop (PN 028) was found next to the right elbow.

Osteography

The osteological material from grave 43 of the archaeological site of Rudina-Benedictine Abbey of St Michael was in an excellent state of preservation, with almost the entire skeleton intact: only facial bones (the maxilla and both zygoma) and the left radius were missing. Evaluation of the cortex was done completely macroscopically, and since the outer layer of the bone was perfectly preserved, with no postmortem or taphonomic changes, the preservation of the cortex was assessed as excellent. The excellent preservation of the cortex made it possible to record any pathological conditions that might have left traces on dry bone. Age at death was estimated at between 9 and 11 years using Scheuer and Black (2004) criteria,[4] primarily depending on dental calcification and chronology of formation and eruption of permanent dentition. Generally, the pelvis is the skeletal element that shows the highest degree of sexual dimorphism.[5] According to Weaver (1980)[6] and Fazekas and Kósa (1978),[7] the differences between the male and female pelvis mirror the later sexual dimorphism of the pelvis found in adults. Boucher's (1957)[8] investigation of the subadult ischial and pubis bones found major differences in the subpubic angle. The timing of fusion of the ischium and pubis is variable, but it normally occurs between 5 and 8 years.[9] Since the morphology of the pubic ramus is one of the key elements in assessing an individual's sex, it is estimated that the remains from grave 43 belong to a young boy.

Pathologies observed on the subadult skeleton from grave 43 include changes to both the cranium and postcranium. Four antemortem blunt-force traumas (Fig. 5) are found on the cranium: 1) the right side of the frontal bone exhibits a lesion that is perfectly round in shape, measuring 22 mm in diameter (Fig. 6). Bulging of the bone is evident on the endocranial side; 2) blunt-force trauma on the left side of the frontal bone, oval in shape, measuring 7 × 5 mm; 3) blunt-force trauma located inferior to the previous one, also oval, measuring 3 × 4 mm; 4) blunt-force trauma on the occipital bone, oval in shape, measuring 5 × 8 mm.

A depressed skull fracture is a break in the cranial bone with depression of the bone inwards towards the brain. It is a type of fracture usually resulting from blunt-force trauma (such as getting struck with a hammer) and presents a high risk of increased

4 Scheuer, Black 2004.

5 Scheuer, Black 2004.

6 Weaver 1980.

7 Fazekas, Kósa 1978.

8 Boucher 1957.

9 Fazekas, Kósa 1978; Caffey 1993.

FIGURE 2. Aerial photo with the location of grave 43 (photo by Vektra d.o.o.).

pressure on the brain, or a haemorrhage of the brain that crushes the delicate tissue. A fracture in healthy bone indicates that a substantial amount of force has been applied and increases the possibility of associated injury. Any significant blow to the head results in a concussion, with or without loss of consciousness. Depressed skull fractures are associated with higher rates of infection, seizure, neurological deficits, and death.[10] Antemortem fractures in the archaeological context are relatively rare in subadult skeletons, and those found in the cranium even rarer. A holistic study of antemortem traumas has shown an incidence of 3.8 % of subadult traumas in the postcranium and 2 % in the cranium[11] recorded in the Croatian Late Medieval skeletal series.

From the bio-anthropological point of view, what stands out in the skeletal remains of this individual are the antemortem blunt-force traumas in the cranium, especially when the individual's age is taken into account. The distribution of these cranial lesions suggests a certain level of interpersonal violence.

The injury to the skull of the deceased corresponds to the shape and dimensions of the face of a war hammer (Cro. *nadžak*). A war hammer is a medieval weapon consisting of a beak, an eyelet and a face. Due to an increase in the degree of armour protection that reduced the effectiveness of infantry melee weapons, the war hammer developed from the war axe during the 14th century. On one side of the weapon, a beak-shaped extension was created to pierce the armour, while on the other end, a massive hammer-like face was developed that allowed for heavier blows (Fig. 7). Originally an infantry weapon, it became a standard piece of equestrian equipment.[12] The injury caused by the weapon was also small and rarely immediately fatal.

Dental caries is recorded in the mandibular deciduous molar. Linear enamel hypoplasia (LEH) is recorded in the permanent dentition. LEH is generally defined as any macroscopic defect in the enamel surface.[13] These defects have been used as a nonspecific indicator of systemic physiological stress.[14]

Dental remains are one of the most enduring physical indicators of an individual's quality of life, and as such provide a very useful insight into the lifestyles of past populations, especially their dietary habits, but also the environmental conditions in which these populations lived.[15] Dental caries is an infectious disease characterised by the demineralisation of inorganic portions and the destruction of organic portions of the teeth. The presence of caries was diagnosed macroscopically, under strong illumination, with the help of a dental probe. This disease is infectious and transferable, and by nature it is progressive, because the maintenance of the same conditions that cause carious lesions ultimately results in the destruction of the tooth.[16] A higher fre-

10 Samandouras (ed.) 2010.

11 Adamić Hadžić 2021.

12 Šercer 1972, 20–21.

13 Pindborg 1970.

14 Goodman, Armelagos, Rose 1980; Gautelli-Steinberg, Lukacs 1999.

15 Watt, Lunt, Gilmour 1997.

16 Pindborg 1970.

FIGURE 3. Grave 43 *in situ* (photo by P. Sekulić).

quency of dental caries has been noted among populations dependent on agriculture.[17] Populations dependent on agriculture have diets with a higher quantity of carbohydrates: the starch and sugar found in wheat, maize and other crops cultivated at the archaeological sites contained 45 % to 80 % of the total calories in the diets of pre-industrial agricultural populations.[18]

Written historical sources such as *urbarii* (medieval legal documents which defined relationships between feudal lords and peasants) provide information on the lifestyle of medieval Croatian populations. These *urbarii* very well exhibit which types of food were used by the different social categories during this period. Millet was the main crop that made up the basis of the everyday diet, because it is easily cultivated, has a short period of vegetation, and can be sown in dry and sandy soil. Wheat was considered the most important cereal for baking bread, while buckwheat and guinea corn also played a very important role in the everyday diet. Besides these crops, rye and barley were also cultivated in large amounts. On the other hand, pork, poultry and fish were the most common sources of protein for Croatian peasants during the Late Middle Ages.[19]

Pathologies recorded in the postcranium are active inflammatory processes (periostitis) on both calcanei. Non-specific periostitis is a basic inflammatory response that develops because of non-specific bacterial infection[20], and also from trauma and from specific infectious diseases such as leprosy, tuberculosis, treponemal disease, and even from conditions such as fluorosis.[21]

Furthermore, both humeri exhibit pronounced entheses of the deltoid muscle (Fig. 8). Pronounced entheses and benign cortical defects are usually associated with excessive muscle use.[22] The deltoid muscle is the muscle forming the rounded contour of the human shoulder. It is the prime mover of arm abduction. It also enables the precise and rapid movement needed for hand and arm manipulation.[23] The deltoid is responsible for elevating the arm. Pronounced muscle attachment sites on the bone suggest an extensive use of the muscle. Excessive use of the muscles of the upper part of the body (arms) can be attributed to repetitive motions like lifting and swaying back and forth. [24]

17 Armelagos 1969; Tóth 1970; Wells 1975; Larsen, Shavit, Griffin 1991; O'Sullivan *et al.* 1993; Fujita 1995.

18 Guthrie 1979.

19 Adamček 1980.

20 Ortner 2003.

21 Larsen 1997; Ortner 2003.

22 Resnick, Greenway 1982.

23 Potau *et al.* 2009.

FIGURE 4. Bone die *in situ* (photo by P. Sekulić).

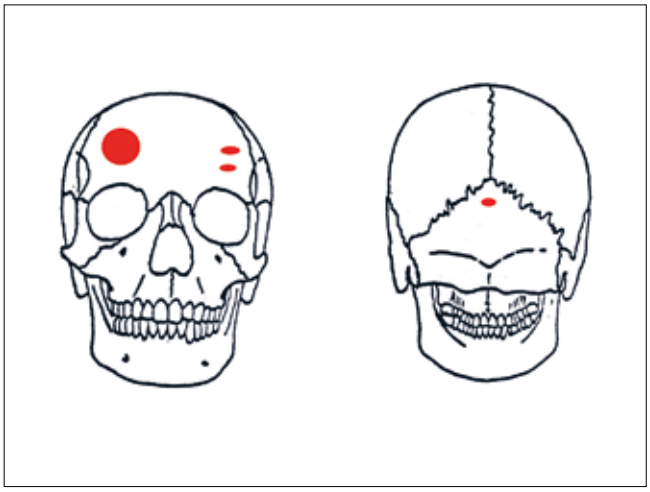

FIGURE 5. Distribution of the cranial traumas (made by V. Vyroubal).

The bone die

The bone die found in the right hand of the deceased from grave 43, excavated in 2018, is particularly interesting (Fig. 9). It is a hexagonal bone[25] die measuring 1.1 x 1.0 x 1.1 cm, the diameter of its dots being 1.5 mm, and its weight 2 grams. Typologically, it can be classified as the so-called type of *tesser*, in which the dots represent a value of one to six, and the sum of the opposite sides is always seven (Fig. 10). On the basis of its characteristics, it is possible to assume that this is a type of die that usually dates to the period after 1450.[26]

It is assumed that the earliest dice originated in Asia during the third millennium BC, while in the area of present-day Croatia they appeared during Roman rule.[27]

The importance of dice games, including games of chance, in the development of culture and civilization, was pointed out by the Dutch historian Johan Huizing in his *Homo ludens* in 1938. According to Huizing, the influence of games on freedom of thought, ingenuity and creativity through leisure has influenced the general progress of civilization.[28] In addition to these effects, it should be emphasized that the concept of happiness was an important life factor in everyday medieval life, so dice must be viewed in the context of medieval superstition.

Numerous written sources and depictions testify to a large number of games[29] and their wide distribution in all segments of society: from secular and ecclesiastical rulers through the nobility, clergy and monks[30] to the common people.[31] Since festivities and celebrations were part of everyday medieval life (from several days of Christmas celebrations through Lent carnivals to celebrations of patron saints and family celebrations), so the various games were an integral part of them.[32] In addition to games of skill and practice, there were games of chance and so-called mixed games that combined both. Unlike other pastimes, gambling was regulated by legal provisions, and was the subject of moral debate and sometimes condemnation.[33] In games of chance, the player does not prove his mental and physical skills; rather, the course of the game is marked by unpredictability.[34]

The most widespread games of medieval Europe which included dice were *backgammon* (Lat. *tabulas,* Ger. *wurfzabel*, Fr. *tric-trac*, Ita. *tavole reale*) and *mill*.[35] They, like chess, spread across Europe

24 Killgrove 2010.

25 Due to their strength, shape and availability, the metacarpal bones of cattle were most commonly used. They were shaped into square bars from which cubes were obtained/cut (Erath 1996, 72).

26 Eerkens, Voogt 2017, 172.

27 Kovač 2017, 208–211.

28 Meier 2010, 77.

29 The statutes of Italian cities mention over 200 different games (Fabijanec 2009, 21–22).

30 Different items of the gaming inventory have been found during archaeological excavations of numerous medieval monasteries across Europe (Meier 2010, 79; Hall 2015, 283–291). The scale is evidenced, among other things, by the provision of the Synod held in Würzburg in 1329, which forbade monks from playing (*ludus alearum, cartarum, taxillorum, anulorum et globo-rum monachis et monialibus prohibemus destricte*) (Meier 2010, 90).

31 Meier 2010, 80–83.

32 Fabijanec 2009, 21.

33 Fabijanec 2009, 23.

34 Fabijanec 2009, 24.

35 Schädler 2000, 112–115; Meier 2010, 77.

FIGURE 6. Antemortem blunt-force trauma on the right side of the frontal bone (photo by V. Vyroubal).

after the Crusades. In addition to games that included a game board, several different games of chance required only a die (*alea, taxillos*).[36] In the 14th and 15th centuries, dice games gradually lost popularity due to the spread of card games.[37] The negative social aspects of games and gambling resulted in numerous attempts at restraint and control by secular and ecclesiastical rulers and city authorities.[38] From the second half of the 14th century, restrictions on the regulation of games of chance (such as determining the permitted game, time and place, organization of city casinos, etc.) also became more frequent in city statutes.[39]

In addition to gambling, dice were also used to make political and legal decisions such as voting, candidate selection, recruitment, resolving disputes, dividing property, and enforcing criminal provisions.[40]

The attitude of the Church towards games encompassed a concern for the bad habits of medieval society, but it is not possible to speak of the existence of a unified attitude.[41] Given the importance and prevalence of games in medieval society, the Church's strategy in the Late Middle Ages consisted of balancing public approval and attempts at metaphorical inclusion in the cult of saints on the one hand, and condemnation on the other.[42] The reason there was a certain level of acceptance of games of chance is a reflection of the economic and socio-historical de-

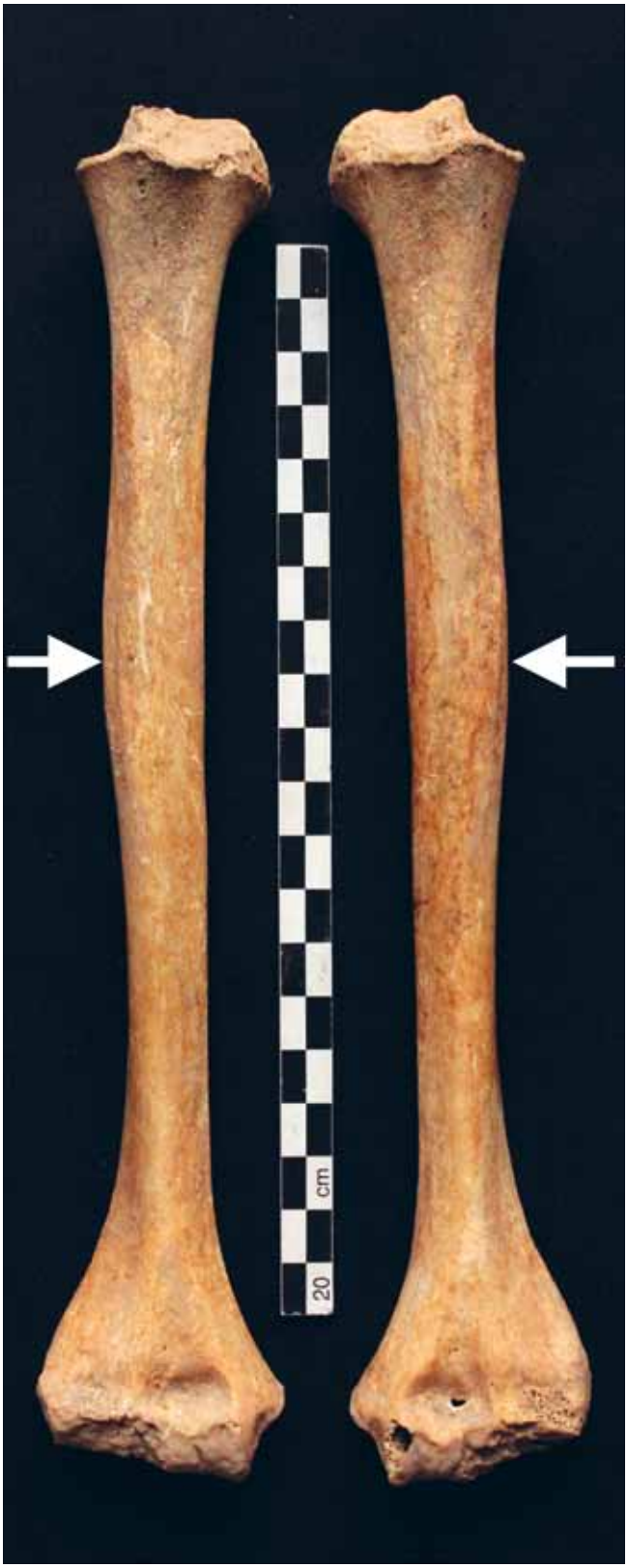

FIGURE 7. Pronounced attachments for the deltoid muscle (photo by V. Vyroubal).

36 On the names and classification of games mentioned in the statutes of medieval towns on the eastern Adriatic coast, see Fabijanec (2009, 24–27).

37 Eerkens, Voogt 2017, 163.

38 Fabijanec 2009, 37–39; Meier 2010, 89–93; Schädler 2012, 23–47.

39 Fabijanec 2009, 35–39; Meier 2010, 93–91.

40 Erath 1996, 96; Meier 2010, 83; Binde 2014, 4–5.

41 Fabijanec 2009, 48–49.

42 Fabijanec 2009, 40–48; Hall 2015, 294.

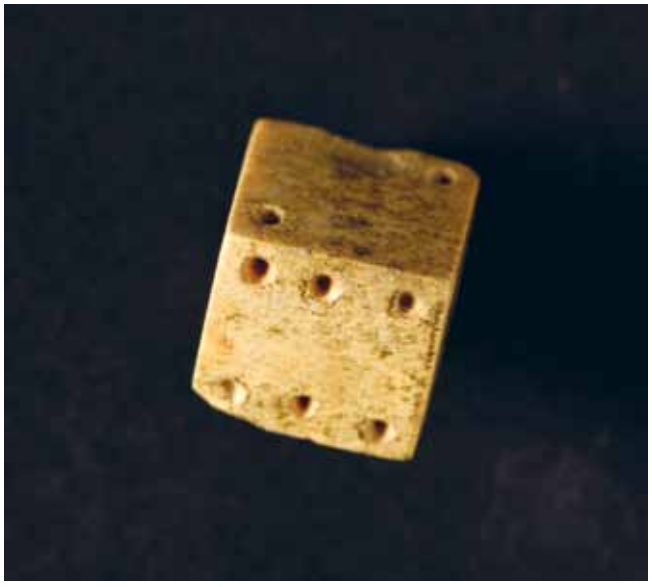

FIGURE 8. Bone die from grave 43 (photo by P. Sekulić).

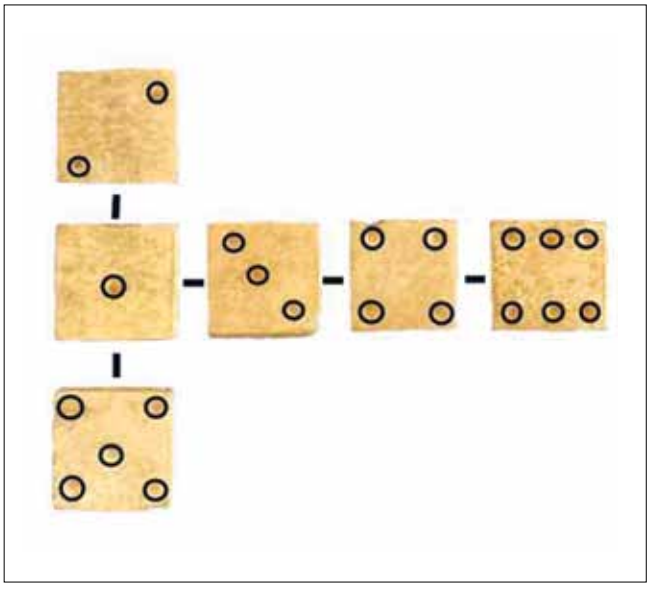

FIGURE 9. Bone die, schematic (made by P. Sekulić).

velopment during the period of the High Middle Ages. A large number of Church intellectuals pursued a more tolerant attitude towards human sinfulness and the possibility of redemption.[43] It was not until the 16th century that attitudes towards gambling intensified due to the Catholic Reformation's efforts to regain its shaky position.[44]

Preserved medieval written sources testify to the popularity of games among children[45] and the government's attempts to protect them from negative effects.[46] Therefore, the observed finding can be interpreted as a kind of personal/sentimental contribution, which may indicate the personal affinity of the deceased for games. It cannot be ruled out that this is some kind of indication of superstition, or a form of popular piety unknown to us.

Concluding remarks

From the bio-anthropological point of view, what stands out in the skeletal remains of this individual are the antemortem blunt-force traumas in the cranium, especially when the individual's age is taken into account. The distribution of these cranial lesions suggests a certain level of interpersonal violence.

The injury to the skull of the deceased corresponds to the shape and dimensions of the face of a war hammer (*nadžak*). The use of war hammers is most often associated with the Ottoman light

FIGURE 10. War hammer (photo by V. Vyroubal).

cavalry, whose attacks on the Požega valley were recorded several times during the 15th century.[47] Furthermore, from the appeal sent to Pope Nicholas V, it is evident that the abbey in Rudina was destroyed during the Ottoman raid on the Požega region in 1450. This petition, submitted to Pope Nicholas V on October 1, 1450, asked that forgiveness be granted to all who devoutly visited the monastery, i.e. the abbey church, and assist in the repair and renovation of the monastery, i.e. abbey buildings.[48] Whether the said grave can be linked to any of the Ottoman attacks remains, for now, a matter of speculation. Since the blunt-force traumas recorded in the skeleton were well healed, there is a possibility that the child survived the violence and died some years later of an unrelated cause. Also, we can only speculate about the personal symbolic meaning of the bone die found in the hand of the child buried in grave 43.

43 Fabijanec 2009, 48–49.

44 Fabijanec 2009, 49.

45 On age and legal classification in medieval statutes, see Karbić (2003, 61–62) and Ladić, Budeč (2020, 221).

46 Thus, the provisions of the Augsburg City Statute of 1276 prescribed the obligation to pay winnings to children, while the medieval Saxon Ordinary Code (*Sächsischen Weichbild*) stipulated that, in the case of impossibility to collect the debt from a child, the debt could be collected only by confiscating robes (Meier 2010, 81, 98).

47 Attacks were recorded in 1400, 1419 and 1441 (Mažuran 1977, 161).

48 Andrić 1998, 47.

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