

Human remains from Mersin Chal, Iran, 2021

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Mersin Chal cemetery (36°02'36"N, 53°25'56"E) is located in the eastern part of Telajim village on the southern bank of the Spahrud River, Poshtkoh district, in the northern part of Semnan province, Iran (**Figure 1**). It was found in 2010 during the survey of the Finesk dam done by Mohammad Mortezaei and Ali Maleki (Mortezaei & Maleki 2010). The first and second seasons of excavations were conducted by Mehrdad Melekzadeh in 2014 and 2020 (Malekzadeh et al. 2023, Sołtysiak et al. 2019), and the third season was completed in the summer of 2021 with two expeditions under the supervision of Mohammad Reza Nemati and Ata Hasanpour (Nemati 2021). Based on surface materials, this cemetery dates to the second half of the first millennium BCE. Five calibrated radiocarbon dates based on human collagen have the range of 408–51 cal BC. The identification of Achaemenid pottery, a seal ring with the figure of Hercules along with a Greek inscription from the Seleucid period, as well as the Parthian clinky pottery, etc. from the graves also corroborates that this cemetery was used during the Achaemenid, Seleucid, and Parthian periods.



Figure 1. Map showing the location of Mersin Chal. Drawing by S. Bakhtiari.

During the rescue excavation of Mersin Chal in 2021, a total of 49 graves were identified in the northwestern part of the cemetery, which was excavated in three trenches covering 250 square meters in total. There were four graves in trench C11 (5×10m), 17 graves in trench D11 (10×10m), and 28 graves in trench E11 (10×10m) (Figure 2). Individuals were buried in bedrock except Grave 7 in Tr. D11. The grave's floor was first covered with flat stones, then the body was placed on them

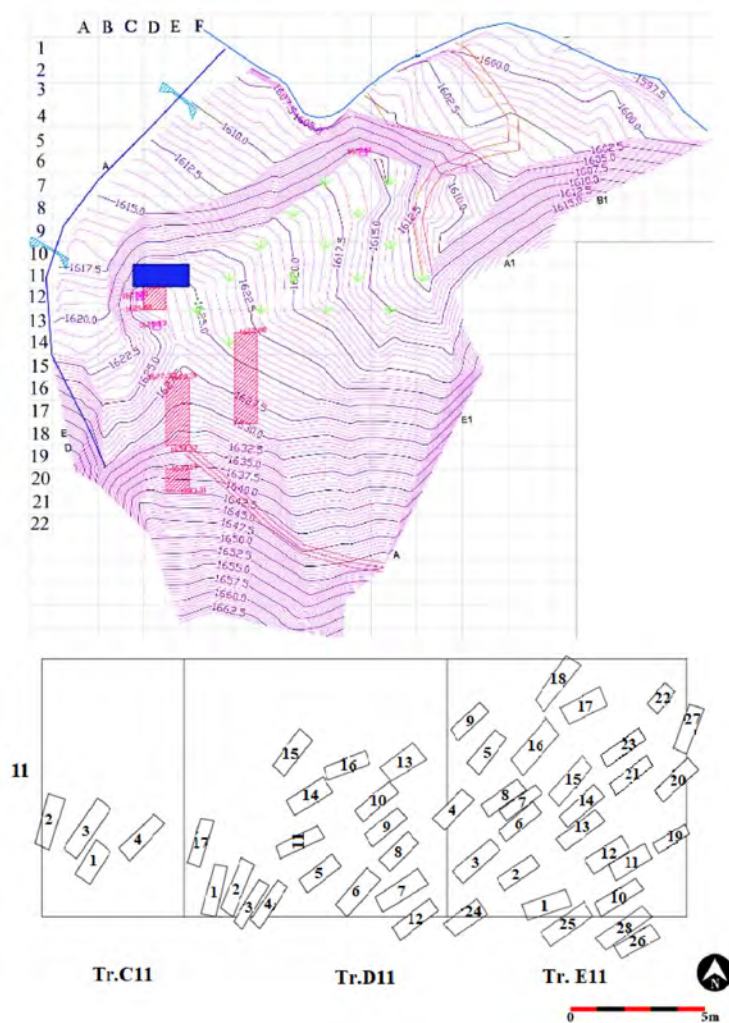


Figure 2. Topography of Mersin Chal cemetery. The position of the trenches of the third season of excavation is marked in blue (Nemati 2021).

(Figure 3). Overall, the graves were similar in size and shape (190–220cm long, 40–60cm wide, and 30–65cm deep). Most graves had large stones delimiting the burial place. Bas-reliefs are present on some of the stone slabs that stand above the individual's head such as the running goat and the zebu. The orientation of the bodies is typically from southwest to northeast. In each grave, a single body was buried in a supine position (Figure 4). The skeletons were often not in good condition due to agricultural activities in the area.

Most of the graves contained grave goods except graves 8, 10, and 15 in Trench D11 and graves 11, 19, and 24 in Trench E11. There were, among others, pottery vessels of different types, such as pedestal bowls, flat, convex, or concave bottom bowls, polyhedral bowls, small jars, spindle whorls; metal objects made of iron, copper, and silver, including all kinds of arrowheads, daggers, knives, sickles, statues, beads, rounded bracelets, bangles, earrings, rings, seal rings, brooch, bells, and beads.

The skeletal remains were relatively complete. Sex estimation of adult individuals was based on the pelvis (pubic symphysis, greater sciatic notch) and skull morphology (glabella, mastoid process, frontal prominence, parietal prominence, occipital prominence, supraorbital margin, and mental eminence) (Buikstra & Ubelaker 1994; Hager 1996; Mays 1998; Tague 1995; White & Folkens 2005). Adult age-at-death estimation was based on the anatomical features of the skeletal remains (e.g., closure of the cranial sutures, the epiphyseal fusion, changes in the auricular surface of the sacroiliac joint, vertebral osteophytes, ossification of the thyroid cartilage, fusion of the hyoid bone, and dental wear (Buikstra & Ubelaker 1994; Iscan et al. 1984; Lovejoy et al. 1985; Meindl & Lovejoy 1985; Oliveira et al. 2006:407; White & Folkens 2005). In subadult skeletons, age-at-death estimation was based on epiphyseal fusion (Schaefer et al. 2009) and dental development (AlQahtani et al. 2010). In total, there were



Figure 3. Trench D11, Grave 7 (Nemati 2021).

24 adult males, 16 adult females, and 2 subadults. It was impossible to assess sex in seven cases (Table 1).

The burials were shallow and there were traces of plant roots, fungus, and insect activity on the bones. In total, the skulls of 48 of 49 individuals exhibit severe post-depositional fractures. Often, the epiphyses and other spongy parts are eroded entirely. Also, the more fragile parts of the skeleton, such as the phalanges, ribs, ster-



Figure 4. Trench D11, Graves 1, 2, and 3 (Nemati 2021).



Figure 5. Trench E11, Grave 16 (Nemati 2021).

Table 1. Basic characteristics of human remains from Mersin Chal. Sex: F* – most likely female, F** – more likely female than male, F*** – probably female; M* – most likely male, M** – more likely male than female, M*** – probably male, U – undetermined.

No	Trench	Context	Grave	Sex	Age-at-death	Grave goods
1	C11	302	1	M*	45	pedestal bowl, arrowhead
2	C11	303	2	M***	+40	pedestal bowl, jar with handle, earring, necklace, bracelet, bangle, pin, dagger, spindle whorls
3	C11	305	3	M***	35-40	flat bottom bowl, arrowhead
4	C11	306	4	F***	adult?	pedestal bowls
5	D11	303	1	M	+40	arrowhead
6	D11	304	2	M	+45	bowl, arrowhead, dagger
7	D11	305	3	M	40-45	jar, arrowhead, dagger
8	D11	306	4	F**	40-45**	jar, dagger
9	D11	307	5	U	?	-
10	D11	308	6	U	adult?	handled bowl, concave bottom bowl, miniature jar, necklace, earring, ring, bangle, arrowhead, bead
11	D11	309	7	M	+30	tripod bowl, pin, ring, arrowhead, dagger
12	D11	310	8	M*	adult (?)	-
13	D11	311	9	M***	adult (?)	handled bowl, earring, arrowhead, dagger
14	D11	312	10	M	45	-
15	D11	313	11	M*	+45	concave bottom bowl
16	D11	314	12	F*	adult (?)	pedestal bowl, handled bowl, small jars, earrings, bracelet, armband, spindle whorl, bead
17	D11	315	13	F***	adult (?)	necklace, bangle, spindle whorl
18	D11	316	14	M	30-35	pedestal bowl, arrowhead, dagger
19	D11	317	15	F*	35-40	-
20	D11	318	16	F**	+35	handled jar, pedestal bowl, arrowhead, sickle
21	E11	303	1	M*	40-45***	handled jar, dagger
22	E11	304	2	M***	adult (?)	pedestal bowl, spindle whorl
23	E11	305	3	M**	adult (?)	arrowhead, dagger, sickle
24	E11	306	4	F	adult (?)	jar, pedestal bowl, earrings, bracelet, bangle, necklace, spindle whorl
25	E11	307	5	U	adult (?)	handled jar, dagger
26	E11	308	6	F*	+50	arrowhead
27	E11	309	7	M***	adult (?)	concave bottom bowl, dagger, sickle
28	E11	310	8	M**	+50	bowl, arrowhead, knife
29	E11	311	9	U	adult (?)	spindle whorl
30	E11	312	10	M***	+45***	bangle
31	E11	313	11	F	adult (?)	-
32	E11	314	12	F	+30	jar, earrings, necklace, bangle, spindle whorls
33	E11	315	13	F**	30-35**	bowl, small jar, earrings, bracelet, necklace, brooch, ring, seal ring, bell, spindle whorl, bead, leather strap
34	E11	316	14	M*	50-55	bowl, arrowhead, dagger, bead, iron object
35	E11	317	15	M***	30-35***	statue, earrings, necklace, bracelet, ring, seal ring, bell, spindle whorl, bead
36	E11	318	16	M***	adult (?)	flat bottom bowl, earrings, bangle, ring, bead, bell, horseshoe, dagger, knife, spindle whorl
37	E11	319	17	F	adult (?)	bowl, arrowhead
38	E11	320	18	F*	40-50	bowl, arrowhead

Table 1. (continued)

No	Trench	Context	Grave	Sex	Age-at-death	Grave goods
39	E11	321	19	U	?	-
40	E11	322	20	U	adult (?)	bowl, earrings, arrowhead, knife
41	E11	323	21	M***	adult (?)	small jar, handled bowl, spindle whorl
42	E11	324	22	U	Sub adult	-
43	E11	325	23	F*	adult (?)	concave bottom bowl, arrowhead, dagger
44	E11	326	24	M	adult (?)	-
45	E11	327	25	U	adult (?)	concave bottom bowl, metal object, dagger
46	E11	328	26	F	adult (?)	flat bottom bowl
47	E11	329	27	F***	adult (?)	small jar, bangle, bead, spindle whorl
48	E11	330	28	M*	+50	polyhedral bowl, arrowhead

num, pubic bones, and even the vertebral column, are typically destroyed. In some cases, the only remaining parts include the shafts of long bones and sometimes parts of the skull (Figure 5). Therefore, it was impossible to observe pathological conditions in most individuals.

The third season of archaeological excavations revealed at least five cases of degenerative joint disease (DJD) in the skeletal remains of Mersin Chal. DJD occurred mainly in lumbar vertebrae and was diagnosed based on the presence of osteophytes on the edge of the articular surfaces (White & Folkens 2005:325). There were also several abscesses developing from periapical granuloma (Forshaw 2014). The teeth associated with these lesions were often lost antemortem. Evidence of possible bone tuberculosis was found in the skeletal remains of an adult male (C11 Gr 1). This condition occurred in the first lumbar vertebrae and the 12th, 11th, and 10th thoracic vertebrae and was identified tentatively as Pott's disease (Waldron 2008:113).

The comparison of the burials of Mersin Chal, excavated in the 2014 (Sołtysiak et al. 2019) and 2021 (Nemati 2021) seasons, reveals a strong similarity in the rectangular shape of the graves and the presence of a single individual buried in each, lying in a supine position with well-constructed graves. Most of the individuals buried at the cemetery are adults, and in both sectors of the cemetery, the pattern of observed diseases, such as degenerative joint disease and dental lesions, was similar.

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