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Short fieldwork report

Human remains from Estark 2, Iran, 2018

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Rescue excavations at Estark, Iran, near Kashan in Isfahan province, have been conducted since 2016 (cf. Sołtysiak et al. 2016; Sołtysiak et al. 2017; Hosseinzadeh et al. 2017; Szymczak et al. 2018). During the 2017 season rescue excavation were extended by the field survey in the Rahaq valley around the village of Estark-Joshaqan. During this prospection, a new archeological site was found about 300m NE from the previously excavated site of Estark (re-labelled as Estark 1 since 2018, see Szymczak et al. 2018), and was recorded as Estark 2 (34°01′29″N 51°13′47″E). The newly discovered cemetery was recently looted and the least destructed area was excavated as Trench A (**Figure 1**). It is dated to the Late Bronze Age (1800–1400 BC) (Helwing 2006) based on pottery found in two excavated graves with articulated and partially articulated human remains.

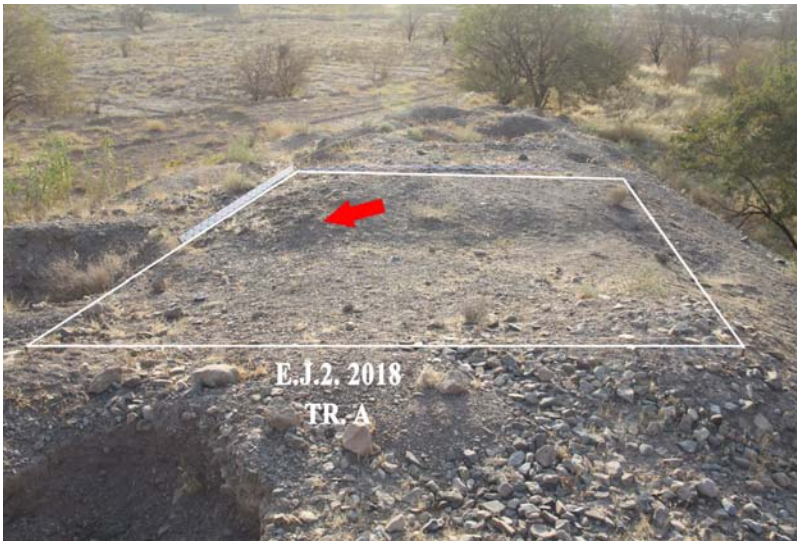

Figure 1. Estark 2, Trench A.

Grave 1 contained the remains of an adult individual, however the bones were too eroded to assess sex or precise age-at-death category. The burial pit was placed on the NW-SE axis. Only the bones of the left humerus, radius and ulna were in anatomical order, in a bent position, in the western part of the burial pit (**Figure 2**). Other bones, belonging most probably to the same individual, were commingled within the filling of the burial pit. Several well preserved vessels were placed next to the articulated remains.

Figure 2. Partially articulated human remains from burial G-1, Trench A.

Grave 2 contained the human remains of an adult, probably male, individual (**Figure 3**). Despite intensive erosion of the bones, a limited sex assessment was possible based on the thick, rounded supra-orbital margin (Walker 2008) and the measurements of both femora (after Sołtysiak 2010). The burial was oriented on the NW-SE axis, the same as in the case of Grave 1. The individual was placed in a flexed position on the right side, head in the SE direction, facing north. Due to the high bone degradation the observation of pathological conditions was not possible. However, some taphonomic changes were noted. One fragment of hand phalanx had intense black staining along with three short parallel cutmarks, oriented perpendicularly to the longer axis of shaft (Bromage & Boyde 1984) (**Figure 4**). Moreover, insect tunneling, c. 5×4mm in cross-section, was observed in the anterior aspect of the proximal metaphysis of the right femur. The activity of insects, such as termites and oriental hornets, is a common taphonomic agent at Estark 1, where in more than half of the graves from all trenches such tunneling was noted (Sołtysiak et al. 2017; Szym-

czak et al. 2018). Furthermore, next to the skull several vessels were deposited, one of which contained animal bones (possibly goat or sheep) in a disturbed anatomical order. Beneath the vessels, a simple metal dagger was placed (**Figure 5**).

Figure 3. Burial G-2, Trench A.

Figure 4. Hand phalanx with black staining and cutmarks, burial G-1, Trench A. Scale bar 1cm

Even though the cemetery of Estark 2 was recently looted, both grave 1 and 2 were not disturbed by contemporary robbers. However, while grave 2 seems to have

Figure 5. Dagger from burial G-1, Trench A.

reamined intact since the deposition of the body, grave 1 was most presumably disturbed in the past. This inference is indicated by the commingling of bones, as well as accumulation of bones and artifacts in one part of the burial pit. This situation seems to be common for both cemeteries near Estark. At Estark 1, the majority of graves contained partially or completely disarticulated human remains along with the disturbed position of artifacts and damaged stone constructions covering the burial chambers.

The state of preservation of bones at Estark 2 is substantially worse than at Estark 1. Remains from both graves at Estark 2 are extremely eroded and fragmented. The osteological analysis was partially conducted *in situ*, due to the risk of complete destruction of bone elements during their collecting. The high degree of degradation is related to the soil conditions at the site. The loose soil with high concentration of pebbles allows water to penetrate burials easily and to dissolve and re-crystallize bone and soil minerals. The exposure to water is critical in rapid bone degradation because it leads to hydrolyzation of collagen proteins and disruption of protein-mineral bonds (Von Endt & Ortner 1984).

To sum up, so far only two highly eroded skeletons of adult individuals, including one probable male, were found at Estark 2. Some analogies between Estark 1 and Estark 2 have been observed in the position of skeletons in the graves, the orientation of burial pits, along with the presence of similar taphonomy agents, such as insect tunneling and looting activity. More detailed analysis of artifacts and burial

rites from Estark 2 is necessary to understand the chronological and cultural relationship between these two cemeteries.

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