

THE PERSIAN-PERIOD NECROPOLIS IN THE FRENCH HOSPITAL COMPOUND, YAFO (JAFFA): CASE STUDY AND OVERVIEW

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INTRODUCTION

Human skeletal remains were found in 13 burial caves in the Yafo French Hospital compound, on the southeastern slopes of Tel Yafo (see Dayan, Levy and Samora-Cohen, this volume). The caves, dated to the fifth–fourth centuries BCE, were part of a larger Persian-period necropolis, part of which was anthropologically examined in the past by the author (Permit No. A-5170).¹

Although several decades of extensive anthropological study have been ongoing in Israel, detailed publications of Persian-period burials are scant (e.g., Stern 1980; Davies, Kostamo and Jyring 1989; Mokari 2000; Herzog and Levy 1999; Onn 1999; Dayagi-Mendels 2002; Gorzalczy, Barkan and Iechie 2010), and anthropological analyses of human skeletal remains are even fewer, or still await publication. Most of the sites where skeletons were discovered were long ago summarized by Stern (1973), with only a few more recent entries by Wolff (2002). This situation is best attested in the IAA anthropological database, where loci associated with the Persian period yielded human bones in only 14 out of the 530 sites excavated in the last 18 years, i.e., only 2.5% of the anthropological findings.² Of these, the cist graves from Tel Shor in Lower Galilee (IAA anthropology database) and cist or jar burials from Tel Mikhal on the central coastline (Herzog and Levy 1999) form the majority of the skeletal remains. The only Persian-period human remains found in the ‘hill country’³ in the past 18 years were a few fragments from Har Berakha in northern Samaria (IAA anthropology database), and from two separate excavations at Ḥorbat Tittora in the central Shephelah (Birman and Goldin 1999; Kogan-Zehavi 2012). The remains from both sites were found inside burial caves typologically characteristic of the late Iron Age, where the dead were laid on hewn benches. Hence, a careful study and publication of any available

¹ I would like to thank Leticia Barda, for producing the map (Fig. 5), and Nimrod Getzov, for his helpful comments.

² This figure is based on data collected up to 2017, when this study was performed.

³ This term is used here as a general reference to the Samaria region, the Galilee (eastern part of the coastal areas) and the Judean mountains and lowlands (Shephelah).

data on the skeletal remains from the Persian-period cemetery at Yafo is of high importance, and a focus on burial practices, including comparisons with the preceding and succeeding periods, is needed.

Methods

Political constraints forced a rapid and simultaneous excavation of all the caves in Yafo, and anthropological data was collected on-site and thereafter reburied. The very poor state of preservation of most of the skeletal remains further impeded a full reconstruction of the anthropological profile of the population. Whenever possible, the anthropological study included a description of the burial postures of the dead, an estimation of the minimum number of individuals (MNI) in a tomb, a reconstruction of the elementary demographic parameters (age-at-death and sex of the individuals), and the recording of some pathologies and epigenetic traits, based on Nagar 2011.

The estimations of the age-at-death of the children were based on epiphyseal closure stages (Johnston and Zimmer 1989) and tooth development and eruption stages (Hillson 1986:176–201). The estimations of the age-at-death of the adults were based on tooth attrition stages (Hillson 1986:176–201), and, when possible, also on vertebral degenerative changes (growth of osteophytes; Bass 2005:20–21). The estimations of the sexes of adult individuals were based on skull morphology and measurements of the humeral and femoral heads (Bass 2005:82, 153, 230). In Cave 5, further estimations of the age and sex of the individual were based on pelvic morphology and age-related chronological changes in the iliac bone (Lovejoy et al. 1985; Bass 2005:208). Detailed and specific descriptions of the methodologies used for the age and sex estimations for each skeleton are given in the archived anthropological report (IAA archives).

The fragmentary nature of the bones did not allow for any morphometric description of the skulls. However, the anthropological examination did include the registration of epigenetic traits listed by Nagar (2011). The methodology of recording these traits followed Hauser and De Stefano (1989); bilateral traits were counted separately for each side.

Relatively complete bones were visually checked for pathologies. Common pathologies, such as the porosity of the vault (porotic hyperostosis) and orbital roofs (cribra orbitalia), trauma and the presence of periostitis in the long bones, were systematically recorded.

DESCRIPTION OF THE REMAINS

Human skeletal remains were found in 12 caves and 2 pit graves dated to the Persian period (for grave descriptions, see Dayan, Levy and Samora-Cohen, this volume).⁴ Usually, the bones were found in one layer on the bottom of the cave, either scattered or in anatomical

⁴ The pit graves were part of the Persian-period necropolis and are regarded here as such. Only one pit grave included grave goods; thus, the second one is presented in the main article under the “undated” section.

Table 1. Estimations of MNI, Age-at-Death and Sexes in the French Hospital Compound Cemetery

Cave No.	MNI	Sex		Age (Years)								Adults of Unknown Age
		M	F	NB-4	5-9	10-14	15-19	20-29	30-39	40-49	>50	
1	3			1	1		1					
2	2				1							1
2 ⁱ	1											1
3	4	1	1		1		1				2	
4	4	2	1	1			1	1			1	
5	8	1	3	1		1	1	1	1	1	2	
5a ⁱ	1	1				1						
7	1				1							
9	1											1
9a ⁱ	1			1								
10 ⁱ	1			1								
11	1	1										1
14	1	1									1	
19	3			1							2	
22 ⁱ	3	1	1	1								2
23	2			1							1	
<i>Total</i>	37	8	6	7	4	1	3	4	1	1	3	13

ⁱ Burial in an entrance shaft.

articulation. In some cases, where the cave's entrance shaft was retained, bones were found at the entrance shaft in a clear burial context. The results of the palaeo-demographic study, including the estimations of MNI, age-at-death and sex, are summarized in Table 1, which is indexed by cave number.

Tomb 1.— The remains included six teeth, and skull and postcranial fragments. The bones were found scattered on the cave's bottom; therefore, the original burial postures could not be determined. The bones represent at least three individuals aged 4–5, 8–10 and 15–17 years.

Tomb 2.— A concentration of bones at the northern part of the cave (L101) included a fragmentary skull, a permanent molar tooth and postcranial remains of a child 6–7 years old. A concentration of bones at the southern part of the cave (L102) included a few fragmentary postcranial remains and a permanent molar tooth of an adult individual (>20 years old), whose sex could not be determined. Bones found in the vicinity of this tomb probably represented a burial in the shaft of this cave; these included diaphyseal fragments of a femur and an ulna of an individual whose age and sex could not be determined. It is clear, however, that these bones do not represent a young child.



Fig. 1. The skeletal remains from T3.

Tomb 3.— The remains included three anatomically articulated skeletons—indicating that these were primary burials—and scattered skull and postcranial fragments of another skeleton whose original posture could not be determined (Fig. 1). The dead were laid on their backs in a general east–west orientation, with their heads in the east. The bones represent a child (5–15 years old), a female (20–30 years old), a male (>20 years old) and another adult individual (>20 years old) whose sex could not be determined.

Tomb 4.— The remains included a skull vault, a lower jaw and postcranial fragments. The remains also included a few anatomically articulated long bones, indicating that this was the primary burial of at least one individual, who had been placed in a general east–west orientation with its head in the east. The rest of the bones were found scattered; therefore, the original postures of the dead could not be determined. The bones represent at least four individuals aged 1–2, 15–16 (possibly female), 18–25 and >50 years. The two adults were identified as males.

Tomb 5.— Bones found at the cave's entrance shaft (L140) included a fragmentary skull, lower jaw and postcranial remains of an 18–30 year-old male. His original burial posture could not be determined. Most of the bones found inside the cave (L141) were anatomically articulated, indicating that this was a partially disturbed primary burial. The dead had been placed on their backs in a general east–west orientation with their heads in the west. These bones represent at least eight individuals: two children aged 4–5 and 14–16 years; three females aged 20–25, 30–40 and 30–50 years; a male aged >20 years; and two individuals aged >20 and >60 years whose sexes could not be determined.



Fig. 2. Burial in a shaft at the entrance to T9.

Tomb 7.— The remains included a few scattered long bone fragments of a child. A concentration of burned bones (L161) was identified as belonging to animals.

Tomb 9.— Bones found in a niche at the cave's entrance shaft (L182) included the upper (cranial) half of an anatomically articulated skeleton, indicating that this was the primary burial of a 1–3 year-old child (Fig. 2). The child was laid on its back in a general east–west orientation with its head in the west. The bones found inside the tomb (L183) were anatomically articulated, indicating that this was the primary burial of an adult (>20 years) whose sex could not be determined. This adult had been placed on its back in a general east–west orientation with its head in the east.

Tomb 10.— Bones were found at an entrance shaft to this cave. These included the fragmentary skull and upper jaw of a 1–7 year-old child. This individual's original burial posture could not be determined.

Tomb 11.— This tomb was another pit grave with bones. The remains included anatomically articulated postcranial bones, indicating that this was the primary burial of an adult (>20 years) male. He had been placed on his back in a general east–west orientation with his head in the east.

Tomb 14.— The remains from this pit grave included an anatomically articulated skeleton, indicating that this was the primary burial of a >60 year-old male (Fig. 3). He had been placed on his back in a general east–west orientation with his head in the west.



Fig. 3. The skeletal remains from T14.

Tomb 19.— The remains included a few long bone fragments and a tooth. The bones were found scattered in three locations on the cave's bottom; therefore, the original burial postures could not be determined. The bones represent at least three individuals aged 2–7, >15 and >20 years.

Tomb 22.— Bones found at the bottom of the cave (L311) included a fragmentary skull and postcranial remains that represented at least three individuals whose original burial postures could not be determined. The bones represent at least one child (<5 years old) and two adults (>20 years old) identified as male and female.

Tomb 23.— The remains included a few skull, lower jaw and postcranial fragments. The bones were found scattered on the bottom of the cave; therefore, the original burial postures could not be determined. The bones represent at least two individuals: a child (3–6 years) and an adult (>18 years) whose sexes could not be determined.

Morphology and Pathology

The expression and frequency of epigenetic morphological traits are listed in Table 2. This table combines data from the present excavation, which includes the majority of the recordings, and a previous one (Permit. No. A-3822).

Table 2. Frequencies of Epigenetic Traits in Yafo (A-5170, A-6093)

Skeletal Element	Trait	Sample Size	Trait Expression	Frequency
Skull	Metopic suture	8		
	Supraorbital foramen	6	1	17%
	Supratrochlear notch	6	3	50%
	Accessory infraorbital foramen	1		
	Parietal foramen	1	1	100%
	Ossicle at lambda	1		
	Inca bone	3		
	Foramen of Huschke	1		
Jaws	Mandibular torus	4		
	Mylohyoid bridge	4		
	Mandible, M3 agenesis	12	5	42%
	Maxilla, M3 agenesis	1	1	100%
Postcranium	Humerus, septal apperture	10	2	20%
	Tibia, squatting facet	1		
	Atlas, posterior bridge	2		
	Atlas, lateral bridge	3		
	Atlas, spina bifida occulta	2		
	Atlas, incomplete fusion of the costal element of the transverse process	2		
	Axis, incomplete fusion of the costal element of the transverse process	3		

Table 3. Pathologies in the Long Bones from Yafo (Adults Only)

Skeletal Element	Fractures		Periostitis	
	Sample Size	N	Sample Size	N
Humerus	2	0	2	1
Ulna	2	0	2	0
Radius	2	0	2	0
Femur	5	0	5	0
Tibia	2	0	2	0
Fibula	2	0	2	0

Microporosity in the orbital roof (*cribra orbitalia*) was noticed in two of the four individuals identified as children. It was not found in the two available adult orbits. Porosity in the vault (*porotic hyperostosis*) was not found in the one child and two adults with relatively complete crania. The presence and frequency of pathologies in the long bones are presented in Table 3. Only one bone, a humerus from T4, manifested periostitis, suggesting that this was due to a non-specific infectious disease (Fig. 4).



Fig. 4. Humerus from T4, manifesting periostitis (a); detail of the humeral mid-shaft (b).

DISCUSSION

In spite of the rapid on-site study enforced by external factors and the poor state of preservation of the bones, the anthropological examination yielded important data. The minimum number of individuals, their burial postures and the demographic distribution were reconstructed in most of the caves to such an extent that they allow a meaningful discussion and valid conclusions. The better-preserved bones also allowed the recording of epigenetic traits and common pathologies.

Demography

The skeletal sample from the French Hospital Compound included infants, children and adults of a wide age range. Both sexes were represented in nearly equal numbers. These demographic characteristics are typical of an ancient cemetery population; however, the relatively small sample (a total of 37 individuals) did not allow for the calculation of mortality-based parameters such as life expectancy.

Four of the tombs were used for a single burial, whereas the other tombs had a minimum number of 2–8 individuals, with an average of 2.9 individuals per grave in the overall cemetery. A similar situation was reported from the Persian-period Tell er-Ras burial caves (Messika 1996; Onn 1999; Shourkin 1999), wherein 5 of 10 caves were used for a single burial, and the rest had 2–3 interred individuals, with an average of 1.5 individuals per grave in the overall cemetery.

The MNI data of both excavations (Permit Nos. A-5170, A-6093) were compared to data retrieved from the Bronze Age burial caves around Tel Esur in the northern Shephelah (Nagar and Winocur 2016; Yannai 2016)⁵ and Kaplan Junction in Tel

⁵ The finds from Tel Esur have also been analyzed by the author in the report on Gilan (Permit No. A-3822).

Table 4. MNI Data of the Tel Esur and Kaplan Junction Burial Caves

Site	Cave	MNI	Reference
Tel Esur	567	45	See n. 4
	Barqai South	26	Nagar and Winocur 2016
	Assawir	123	
	561	16	See n. 4
	562	137	
	548	16	
	Tomb 80	94	Nagar 2010
Kaplan Junction	44	7	Unpublished
	45	64	
	1	15	
	2	43	
	3	8	
	4	2	

Aviv (unpublished; Eliot Braun and Edwin C.M. van den Brink, pers. comm.) (Table 4). Although there is a chronological gap, the Tel Esur and Kaplan Junction cemeteries bear resemblance to the Yafo cemetery, as all have a concentration of several contemporaneous multiple-burial caves. The bones in the Tel Esur and Kaplan Junction cemeteries were in a very poor state of preservation; however, they were carefully sieved for MNI estimations, and some were even used to set methodological standards (e.g., Nagar and Winocur 2016). These sites had much larger sample sizes than Yafo, ranging between 23–65 individuals per cave. This difference points to the familial nature of the burial caves in Persian-period Yafo, unlike the mass-burial caves typical of many Early Bronze Age sites.

Burial Practices

Although many skeletal remains were extremely fragmentary or scattered due to post-depositional damage, some bones were still anatomically articulated, indicating that these were primary burials. Thus, burial practices could be determined for 12 individuals in the present study and an additional individual from the previous excavation (Permit No. A-5170).

All the dead had been placed on their backs. Twelve individuals were interred in an east–west orientation; only one (T19) showed slight deviation to a southeast–northwest orientation. Although the orientation of the bodies followed a strict pattern, there was apparently no preference to the position of the head being either in the east (in five caves) or west (in four caves). Other Persian-period cemeteries, where bones were found in caves

Table 5. Characteristics of Body Placement in Persian-Period Graves in Israel

Site	Grave Type	Sample Size	Body Posture	Body Orientation	Head Position	Reference
Tell er-Ras, Area B	Caves	7	Supine	East–west; one slightly deviated	One in the east, others unknown	Onn 1999
	Pit	9	Supine	East–west	East	
Tell er-Ras, Area C	Caves	5	Supine	East–west	East	Shourkin 1999
Tell Es-Sumeiriya ⁱ	Caves	1	Supine	East–west	East	Messika 1996
Tel Mikhal	Pit	23	Supine	East–west; some slightly deviated	East or west, preference to east	Davies et al. 1989
	Cist	51	Supine	East–west; some slightly deviated	East or west, preference to east	
Tel Mikhal	Cist	6	Supine	East–west; some slightly deviated	East	Herzog and Levy 1999
Tel Shor	Cist	15	Supine	East–west; some slightly deviated	East or west, preference to east	IAA database
Yafo, the French Hospital Compound	Caves	13	Supine	East–west; one slightly deviated	East or west, preference to east	Present study
Yafo, Yefet Street	Caves and cist	8	Supine	East–west	East or west, preference to west	Avner-Levy 1998
Yafo, Ha-Migdalar Street	Cist	2	Supine	East–west	One east, one west	IAA database
Ashqelon, Marina	Cist	1	Supine	East–west	West	Golani 1996

ⁱ Near Tell er-Ras and therefore, might represent the same population (see Dayagi-Mendels 2002 for a description of the burial caves at Tell er-Ras).

or cist graves, showed approximately the same pattern as the Yafo burial caves (Table 5). These cemeteries included large cemeteries, such as Akhziv (Tell er-Ras), Tel Shor and Tel Mikhal, and sporadic burials, such as the Ashqelon Marina and Ha-Migdalar St. in Yafo. Although the bones of three individuals from Ḥolot Yavne (Gorzalczany, Barkan and Iechie 2010) and five from Kafr Yamma (Mokari 2000) were examined by the author, the burial postures of the dead in those cases could not be described on-site. The data in Table 5 shows that all the dead were laid in a supine position and on an east–west orientation, irrelevant of the grave type. Slight deviation in some cases from the exact east–west axis in Yafo, as well as in a few other burials, could have resulted from the sun’s orientation in different seasons of the year, as was shown in later periods in populations sanctifying these directions (Gorzalczany 2007). The vast majority of the heads of the deceased in these cemeteries were to the east. An intriguing possibility suggested by Wolff (2002) was that those with

their heads to the west reflect Egyptian influence, while those with heads to the east reflect Phoenician beliefs. Finding both directions arbitrarily dispersed in the same cemetery, and sometimes in the same cave (regarded by Wolff himself as representing a family), renders this option unlikely.

Another aspect of burial practices might be a separate primary interment at the cave's entrance shaft, probably practiced after sealing the main burial chamber. Such burials were found in five cases in the French Hospital Compound in Yafo (see Table 1). Similar burials were reported from the Persian-period burial caves at 'Atlit (Johns 1933). Only one burial cave (L16) was found intact and was therefore used for further analyses by Stern (1973) and Wolff (2002). As for the rest of the graves, medieval interference, the possible re-use of some of them, and a confusing presentation of the data, made it impossible to incorporate them into Table 5. Still, there is a striking similarity between the 'Atlit and Yafo cemeteries. In 'Atlit (Johns 1993), the dead were interred in sealed caves, probably originally not covered by sand; later burials took place in the entrance shaft. In 'Atlit, the MNI was 1–5 individuals in a burial chamber, and the dead were primarily interred on their backs on an east–west direction, while a few slightly deviated from that orientation. Out of an MNI of 14 individuals from the original burial phase, 12 were placed with their heads to the east, and 2, with their heads to the west. Although use of this cemetery might have extended into the Hellenistic period, this is by far the best equivalent to the French Hospital Compound in Yafo.

Similar to the Persian-period cemeteries along the northern coast of Israel, where the dead were interred in caves and in graves, both types of burials were found in Gezer (Stern 1973) and Tell er-Ras (Onn 1999). This suggests that the cist graves on Ha-Migdalor St., Yafo, located some 200 m west of the French Hospital Compound, could have represented a different area within the large necropolis that was used by the same population from the same large settlement.

The paucity of anthropological data from the hill country of Israel during the Persian period (see *Introduction*) limited further characterization of the burial practices of a possibly different population than that of the coastal plain. Faust (2012) related to the ongoing debate regarding the probability of continuity between the rural Iron Age population in Judah and that of the Persian period, despite the Babylonian destruction; he opts for a general discontinuity. To assert his view, Faust notes that the characteristic “Judahite Tomb” (referred to as the “three bench type”) is absent from the Persian period (Faust 2012:110). However, several findings at Bet Shemesh (Stern 1973:94), Har Berakha (IAA database), Ḥorbat 'Almit (Dinur 1986; Har-Even 2003), Jerusalem (Mamilla; Reich and Shukron 1994), Khirbat Kabar (Baruch 2006), Regevim (Sa'id 2012) and Ḥorbat Tittora (Birman and Goldin 1999; Kogan-Zehavi 2012) suggest the opposite. These sites exhibit a continuation in burial practices from the earlier late Iron Age, where the dead were interred in caves and laid on three carved benches along their walls.

Kloner and Zelinger (2007) have shown an evolution from the Iron Age bench-type tomb to the Second Temple-period Judahite burial caves. They concluded that the Iron Age

burial caves remained in use in the Persian and early Hellenistic periods, and new caves of this type were hewn at the end of the third and mainly in the second–first centuries BCE. They suggested that the people using these graves during the Persian period were Jews, perceiving this tradition as representing ancient Judahite customs. Continuous use of the same bench-type caves from the Iron Age to the Persian period was demonstrated in several of the sites mentioned above, such as Tittora Caves I–V (Kogan-Zehavi 2012) and Mamilla Cave 19 (Reich and Shukron 1994). The excavation of several three bench-type burial caves at ‘Almit, which were dated by the excavator to the late Iron Age by the architecture but contains only Hellenistic offerings (Har-Even 2003),⁶ further supports this hypothesis. The finding of the caves from the French Hospital Compound at Yafo next to the similar Persian-period cave described by Dinur (1986) lends further support to the proposed continuation between these three periods as postulated by Kloner and Zelinger (2007), Magen (2004:74, 82) and the author.

The idea of continuity might be drawn also from the Hellenistic burial cave in Jatt (Porath, Yannai and Kasher 1999: Cave 5), which manifests typical Hellenistic features (niches, inscriptions) combined with earlier Iron/Persian ones (three-bench architecture), as well as from Hellenistic-period caves in Jerusalem (Wiegmann and Tanami 2014) and Ḥorbat Rosh Zurim (Peleg and Feller 2004), which were hewn in the characteristic Iron Age three-bench tradition. A unique case are eight Persian-period caves surveyed near Rujm el-Khader, south of Jerusalem (Batz 2009). Although no benches were carved along the caves’ walls, a small bone-collecting pit in its interior was also regarded by the excavator as a possible remnant of late Iron Age (Judahite) practices (Osborne 2011). All this information incorporated together supports a population continuity in the hill country (mainly Judahite and Samaritan, possibly former Israelite), which likely had a different identity from the population at Yafo and the coastal region in general.

A special case relevant to our discussion is Tel Bira, located at the westernmost foothills of Lower Galilee (Prausnitz 1962; 1993; Stern 1996; Alexandre and Stern 2001), which was the border area during the later Hellenistic–Roman periods between the Jewish Galilee and the Pagan coastal plain. Three stages were noticed in the burials at this site. In the earliest stage, three bench-type burial caves were excavated; although unpublished, the pottery from these caves was dated to the late Iron Age (Alexandre and Stern 2001:192; Nimrod Getzov, pers. comm.). In the second phase, cremation burials were found, such as those excavated by Alexandre and Stern (2001: Area B), dated to the second half of the eighth or the early seventh century BCE; these manifested a close affinity with the Phoenician mainland in the eighth century. The latest phase are the hewn, three bench-type graves at Tel Bira, dated to the Persian period (Stern 1996; Alexandre and Stern 2001:183, Area A).

⁶ The excavator dated the caves to the Iron Age based upon accepted grave typology. However, as another cave in this village was dated to the Persian period (Dinur 1986), it is possible that the two caves in question (Har-Even 2003) were hewn in the Persian period.

Could this example, the only one north of the central hill country, mark the shift between the different populations over the course of time?

Morphology and Pathology

Skulls were fragmentary and not available for morphometric study. However, epigenetic traits could be recorded from fragmentary bones that had relevant osteological elements. The frequencies of epigenetic traits are an important tool in distinguishing between skeletal populations and determining the level of kinship in the skeletal sample. The sample size in the present study was extremely small, making such an analysis impossible. However, the lack of any data ever published from this period in Israel makes this data recording highly important for future studies. Therefore, the information is presented in Table 2, and has been incorporated into the relevant IAA database for future studies.

The sample of complete bones surveyed for the presence of pathologies was also small. The frequency of *cribra orbitalia* in the population could not be calculated. However, its occurrence in two of the four children's orbits in Yafo and in both young adult orbits from the previous excavation (Permit No. A-5170) suggests that it was a common phenomenon in this population. Frequent occurrences of *cribra orbitalia* were also reported from the Middle Bronze Age site of Rishon Le-Ziyyon, interpreted as a probable sign of malaria (Nagar and Eshed 2018). The geographic proximity in terms of distance, altitude and microclimate between Yafo and Rishon Le-Ziyyon suggests the same explanation in the present case.

The small sample of relatively complete long bones described in Table 3 hindered calculating the frequencies of fractures and periostitis in the skeletal population. In addition to Table 3, two femora and two tibiae were found in the earlier excavation of the same cemetery, where no pathologies were noticed (Permit No. A-5170).

Skeletal Remains from Nearby Structures

Human skeletal remains were also found scattered inside rectangular structures south of the Persian-period necropolis. These structures, dated to the Byzantine and later periods, probably did not serve burial purposes (see Dayan, Levy and Samora-Cohen, this volume). Rather, they were used as depositories in later times for bones of unknown origin. Given the fact that the excavation was extremely limited in time, these bones of unknown historical context were reburied without examination. The present report, therefore, deals solely with the clearly Persian-period skeletal remains.

CONCLUSIONS

The rapid on-site study of the simultaneously excavated tombs in Yafo yielded important results. The human skeletal remains retrieved from the 13 Persian-period burial caves represented at least 37 individuals. These included infants, children and adults of both sexes. The skeletal sample was too small to allow for the calculation of age-dependent mortality

statistics. However, the gross demographic profile suggests that the cemetery included a regular, civilian population.

The average MNI in the graves was 2.9 individuals. Unlike in other periods, mass burials have not yet been found in Persian-period Israel. In Yafo, most caves were hewn as single burials. In this respect, they resemble the pit or cist graves that were commonly used in the Persian period, and stand in sharp contrast to the earlier, mass burial customs of the Early and Late Bronze Ages.

The Yafo burials followed exactly the same interment pattern found in other large Persian-period cemeteries along the Israeli coastline and northern valleys, comprising both pit and cist graves, and burial caves. The French Hospital Compound burials did not include jar burials, such as were reported from Persian-period Tel Mikhel; however, one jar burial dated to the Persian period was found in a bordering excavation on Yefet Street (Avner-Levy 1998), which could represent a continuation of the French Hospital Compound cemetery. The burial practices in this geographic area in the Persian period can therefore be easily characterized: the dead were primarily buried on their backs (supine) in graves or burial caves, but sporadic jar burials can also be found; the caves were probably used only once; the dead were interred in a general east–west orientation, although slight deviation was reported in some cases; the position of the head was either in the east or in the west, but there was a noticeable preference to the eastern side.

Placing the dead in the same direction in the coastal areas and in the northern valleys of Israel must have been a rule of compliance dictated by religious beliefs during the Persian period. Although burial practices are not sufficient to determine the ethnicity of the populations in question, they have proven to be an important tool in distinguishing between neighboring populations of different ethnicities and religious beliefs in ancient Israel (Stern and Getzov 2006), and were successfully employed to draw the boundaries of the Judean Kingdom at the end of the Iron Age (Yezereski 1999). Based on the distribution of the shaft tombs in the ancient Middle East, Stern (1984) concluded that shaft tombs characterized the Phoenician population. Given the similarity between the French Hospital Compound cemetery and the other cemeteries along the coastline and the northern valleys, these burial practices can be attributed to the predominant Phoenician identity of the Yafo population, as well as the majority of the coastline populations, as was suggested by various scholars (Stern 1973; Messika 1996; Onn 1999; Shourkin 1999; Wolff 2002).

The paucity of contemporaneous data from the hill country makes it hard to similarly analyze the populations buried there. However, the examples given in the discussion include burials in the hill country, suggesting that there was a continuity of the populations from the previous late Iron Age to the Persian period, as was postulated by several scholars (Stern 1984; Magen 2004; Kloner and Zeligler 2007), despite the obvious demographic decline following the Assyrian and Babylonian conquests. The marked and systematic difference during the Persian period between the burial practices in the hill country and those along the coastal plain and valleys as described in this study, are presented in Fig. 5. The spatial distribution of these two distinct burial types in the Persian period suggests that the Persian-



Fig. 5. Persian-period burial sites discussed in the present study.

period burial practices in the Southern Levant still reflect the separate identity of the core populations that once inhabited these two different geographic areas.

Different burial practices on the southern coast, which might represent a third burial tradition of yet another population (although highly influenced by the Phoenicians), were not discussed in this study. However, in light of the homogeneity of the burial practices in

Persian-period Israel highlighted in the present study, the unique monumental grave in the region of Shekhem (Stern 1980) is indeed an exception. Since continuity of the populations from previous periods in the different geographic regions, especially in the hill country, is suggested in the present study, Stern's conclusion of a foreign identity of the skeletons from Shekhem, exiled to this region from various regions of Mesopotamia, is supported.

The frequency of epigenetic traits and the presence of common pathologies were also recorded in this study. Although only a small sample was available, it added important information used to augment the primary databank. These data form the basis for the anthropological characterization of the populations of the land of Israel in the Persian period. Assuming that the coastal region and the hill country were populated by separate ethnic groups, per evidence based on burial practices, the recording of genetic or epigenetic data (DNA samples taken from bones, vs. morphometrics and epigenetic traits, respectively) is a crucial element in future anthropological studies.

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