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The Paleolithic of northwestern Zagros. 2012–2019 MAFGS Survey: Data and preliminary results

Le Paléolithique du nord-ouest du Zagros. Missions MAFGS 2012–2019 : données et résultats préliminaires

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ABSTRACT

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Between 2012 and 2018, the surveys conducted by the french archaeological mission of the Sulaimaniyah Governorate in the Rania and Peshadar plains of Iraqi Kurdistan, previously devoid of Paleolithic records, have yielded numerous lithic assemblages from open-air sites, caves and rock-shelters. We present here six lithic assemblages from the three districts surveyed, Rania, Peshdar and Dukan. Despite the absence of chronostratigraphic contexts and the still fragmentary data, the first typo-technological analyses carried out allow us to propose a first techno-cultural attribution to the Palaeolithic and, more specifically for some assemblages, to the Middle Palaeolithic. Among the sites uncovered, it is certainly the Paleolithic shelter of Sarsyan-Rostam Agha that was the most distinctive and which represents, with the Shanidar cave, one of the rare Paleolithic sites preserved in the northwestern Zagros. Its preserved Paleolithic sequence, rich in archaeological remains, and explored in a test-pit conducted in 2018, shows clear affinities with the Mousterian Zagros industries, a well-defined entity based on sites such as Shanidar, Bisitun, Warwasi and Mar Tarik.

Mots clés:

Kurdistan irakien

Zagros

Paléolithique

Moustérien

Assemblages lithiques

RESUME

Les prospections de la mission archéologique française du gouvernorat de Soulaïmaniah (MAFGS) menées entre 2012 et 2018 dans les plaines de Rania et de Peshadar au Kurdistan irakien, zone jusqu'alors quasi-dépourvue en sites paléolithiques, ont permis de découvrir, en surface, de nombreux assemblages lithiques issus de sites de plein air, en grottes ou abris sous-roche. Nous présentons ici six assemblages lithiques provenant des trois districts prospectés, Rania, Peshdar et Dukan. Malgré l'absence de contextes chronostratigraphiques et des données encore fragmentaires, les premières analyses typo-technologiques réalisées permettent de proposer une première attribution techno-culturelle au Paléolithique et, plus spécifiquement pour certains assemblages, au Paléolithique moyen. Parmi les sites mis au jour, c'est certainement l'abri moustérien de Sarsyan-Rostam Agha qui fut le plus distinctif et qui représente, avec la grotte de Shanidar, un des rares sites paléolithiques préservés du nord-ouest du Zagros. Sa séquence paléolithique préservée, riche en vestiges archéologiques, et explorée lors d'un sondage réalisé en 2018, présente de nettes affinités avec les industries moustériennes du Zagros, entité bien définie sur la base de sites tels que Shanidar, Bisitun, Warwasi et Mar Tarik.

1. Introduction

The Zagros Mountains and the whole of Western Asia constitute a fundamental zone to apprehend the first Eurasian settlements and understand the history of humanities, their migrations and evolutions. Their geographical position, at the crossroads of the great continents, places them throughout the Pleistocene, mainly during the Upper Pleistocene, at the center of successive migrations by different cultural groups and potentially by different humanities. If some settlement indications are perceptible as early as the Lower and/or Middle Pleistocene (e.g., sites of Amar Merdeg, Pal Barik and Gakia, Minab) (Biglari, Shidrang, 2006; Jaubert et al., 2006; Darabi et al., 2012), it is essentially from the Upper Pleistocene, as early as MIS3 (Becerra-Valdivia et al., 2017), that this region seems to have been intensively occupied. The numerous sites, mostly in shelters and caves, and chrono-cultural sequences affiliated with the Middle Paleolithic and then the Upper Paleolithic bear witness to this (e.g., Warwasi, Bisitun, Mar Tarik, Gar Arjeneh, Amar Merdeg and Yafteh sites in Iran and Shanidar site in Iraq) (e.g. Braidwood and Howe, 1960; Solecki, 1963; Hole and Flannery, 1967; Dibble, 1984, 1993; Dibble, Holdaway, 1993; Olszewski, Dibble, 1993, 1994, 2006; Lindly, 1997; Biglari, 2001; Otte and Kozłowski, 2004, 2007; Jaubert et al, 2006, 2009; Otte and Kozłowski, 2004, 2007; Bordes and Shidrang, 2009; Bazgir et al., 2014; Shidrang et al., 2016)

While the territories of the central Zagros in Iran have, from the 1930s-1950s and then from the 2000s onwards, been largely invested by multiple research programs (e.g. Coon, 1951; Bazgir et al., 2014; Biglari and Heydari, 2002; Conard et al., 2006; Field, 1951; Gashidian et al., 2009; Hile and Flannery, 1967; Jaubert et al., 2005, 2009; Otte et al., 2007, 2009; Roustai et al, 2002, 2004) by concentrating the main sites and chrono-cultural sequences as well as all the debates on the conditions of emergence and development of Paleolithic cultures (e.g. the Zagros Mousterian and the Zagros Aurignacian) in this region, the northwestern foothills of the Iraqi Kurdistan Zagros mountains have, for geopolitical

reasons and for more than half a century, have never been intensively surveyed and studied, even with the reopening of this region to archaeologists in 2011.

Since 2012, the french archaeological mission of the Soulaïmaniah Governorate (MAFGS) has undertaken surveys in the Soulaïmaniah Governorate, one of the three governorates of the Iraqi Kurdistan region, in order to create an archaeological map of this vast territory. One of the main goals of the mission was to understand changes in territories and settlement in the northern part of the Zagros from the Lower Paleolithic to the present. From 2012 to 2018, the Rania, Peshdar and Dukan districts in northeastern Soulaïmaniah were surveyed (Fig.1). The MAFGS has identified more than 440 archaeological sites covering all periods. For the early periods, preliminary data evidence the richness in lithic assemblages in this region. Fieldwork has uncovered 75 lithic assemblages, mainly located in the lower and mid-mountain zones, in or close to open-air sites, rock shelters and caves. Despite the absence of clear typo-technological elements and chronostratigraphic contexts, some assemblages allow to propose a first techno-cultural attribution: Paleolithic and for some of them, Middle or Late Middle Paleolithic (n=16).

In this paper we present six lithic assemblages, from the different districts surveyed, including open-air sites (n=4), rock shelters and caves (n=3). Six were collected on the surface and one was discovered in stratified context (site n°77, Sarsyan-Rostam Agha). Given their techno-typological characteristics, five of them have been identified as Middle Paleolithic and two only as Paleolithic. Among these, it is certainly the site of Sarsyan-Rostam Agha (n°77), discovered in 2013, which was the most distinctive. The 2018 test-pit yielded a rich assemblage from a stratigraphical sequence relating to the Middle Paleolithic. Preliminary typo-technological studies revealed an important lithic assemblage focused on a production of small elongated and convergent blanks with evident Zagros Mousterian affinities

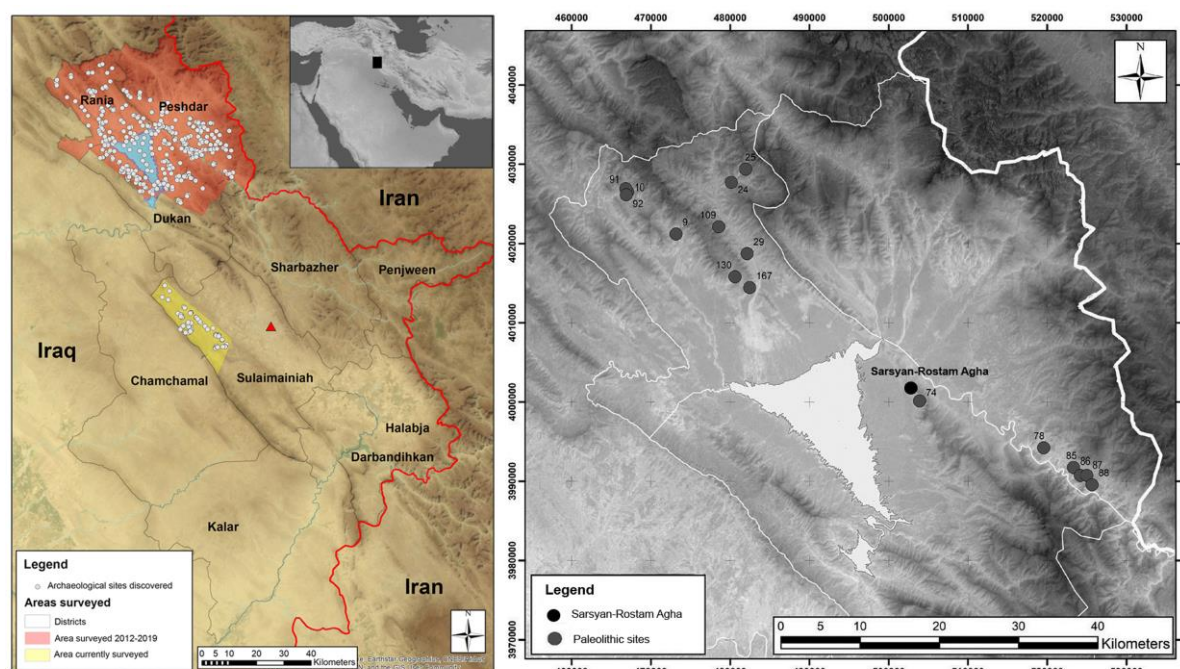


Fig.1 Left: map of the surveyed areas in the Soulaïmaniah Governorate; right : the Paleolithic sites in Peshdar and Rania plains.

2. Middle Paleolithic lithic assemblages

The surveys conducted in the three districts east of Lake Dukan, created by Dukan Dam, have yielded several flint and limestone assemblages, some of which can be attributed to the Middle Paleolithic.

2.1. The Sarsyan-Rostam Agha assemblage (site n°77)

The Sarsyan-Rostam Agha rock-shelter, discovered in 2013, is located in the east of Iraqi Kurdistan, east of the city of Rania and the current Dukan lake. Located in the limestone formations of Maqooq Mountain, about 800 m a.s.l, it is 14,5 m long, 11,5 m wide and 10 m high. The site is oriented north-south, with an entrance facing south (Fig.1 and Fig.2).

During surveys around 60 lithic remains were collected from the surface and have been assigned to the Paleolithic or even to the Middle Paleolithic (Fig.3). In the bottom of the shelter, three hardened layers (described as Stratigraphic Unit-0) containing lithic and bones remains and suggesting the preservation of underlying layers, were detected (Fig.4). In 2018 the sediment fill was explored with a trench of 12,8 m long and 1 m wide from the entrance to the hardened layers located at the bottom of the shelter (Fig.4). Through the trench, five first layers of few centimeters deep, disturbed and mixed with modern remains as well as lithic Paleolithic remains, have been identified (described as Stratigraphic Units-1-5). These five first layers were based on an undisturbed and compact layer, rich in archaeological remains (lithic and bone) and gravel, and identified as the first Paleolithic layer preserved (described as Stratigraphic Unit-6) (Fig.5). At the bottom of the shelter, this layer SU-6 underlies the hardened layers SU-0. At this location (at the southern extremity of the trench), SU-6 was explored with a test-pit of 1 x 0,5 m and of 0,50 depth (Fig.5).

The stratigraphic unit 6 consist of a homogeneous and compact beige silt-clay ensemble containing numerous gravels and limestone blocks (of various size) mixed with numerous lithic and bone remains. Changes were observed in the constitution of this ensemble, less compact and richer in charcoal in depth.



Fig.2. 1, 2, 3. General views of Sarsyan-Rostam Agha; 4. inside view of the shelter; 5. entrance view from the site; 6. View on the Rania plain from the site (photos MAFGS@S. Bonilauri and M. Jami Alahmadi)



Fig.3 Sarsyan-Rostam Agha lithic industry discovered in surface (2013). **1 to 4.** Mousterian points and convergent scrapers; **5 and 6.** unretouched convergent pieces; **7 and 8.** unretouched Levallois convergent flakes; **9 and 10.** retouched blades/bladelets; **11 and 12.** unretouched blades/bladelets; **13.** unretouched cortical blade/bladelet; **14 to 18.** unretouched broken bladelets; **19.** bladelet core; **20.** truncated and retouched Levallois flake; **21 and 22.** retouched flakes (distal parts, scrapers); **23.** centripetal Levallois core (limestone) (*drawing E. Božda*)



Fig. 4 Sarsyan-Rostam Agha: **1.** view of the trench; **2.** view of the stratigraphic unit-0; **3.** detail of the stratigraphic unit 0 (photos MAFGS@S. Bonilauri and M. Lemée)



Fig.5 Sarsyan-Rostam Agha: **1.** stratigraphic section west-east of the test-pit 2018; **2.** detail of the stratigraphic unit 6 (photos MAFGS@S. Bonilauri)

The unit 6 is very rich and dense in archaeological remains (both lithic and bone) (Fig. 5). More than 900 lithic artifacts, representing a flake-based industry and mainly assignable to the Middle Paleolithic, have been collected in the test-pit (Tabl.1). The raw material of the lithic assemblage is varied including mainly radiolarian chert/flint and some limestone (Fig.6). The chert/flint is locally available in secondary position outcrops from the plain and surrounding rivers located near the site as pebbles or nodules of various size and colors. The limestone is also available locally in large quantities in primary outcrops or different-sized blocks. Despite an important patina, the preservation of the lithic assemblage is good (absence of gelifractions, rolled and heating artifacts). The ridges and cutting edges of the products are well preserved indicating minor post-depositional disturbance.

The unit 6 lithic assemblage is composed of different blank categories: mainly flakes and small flakes, followed by elongated flakes and blades and then by points, triangular flakes and some bladelets (Tabl.1 and Fig.7). The production results from several flaking methods, identified by technical features of the products and the cores characteristics: Levallois and non-Levallois including a Kombewa method, different flake knapping methods and in a small proportion, some bladelet knapping methods. Flakes (including wide and small flakes) are the most representative and constitute more than 66% of the blank production. A combination of Levallois methods (centripetal, unidirectional and bidirectional), Kombewa methods and different flake knapping methods have been applied to produce flakes with various morphology and sizes. The flake group includes main-intended products as well as flakes linked to the preparation or maintenance of the cores (cortical flakes, *déborçant* and backed flakes). Most of flakes are not retouched. Blades and elongated flakes are well represented among the lithic assemblage and represents more than 20% of the blank production. Blades and elongated flakes seem mainly resulting from Levallois knapping methods. Most of blades and elongated flakes are not retouched. The products with convergent edges (including points and triangular flakes) are less present since they constitute about 9% of the blank production. Mainly knapped from Levallois cores, these convergent pieces have various morphologies and include elongated points, small wide-based points, symmetric pieces (the convergent distal ends are aligned with the morphological and reduction axes) and asymmetric pieces (the distal ends are offset from the morphological and reduction axes). Their profiles are straight (especially for small wide-based points) or curved and their platforms are often faceted. While some of these points are not retouched and thus obtained during the production phases, most have been retouched on at least one lateral edge, and often on both. The retouch allowed to shape at least the distal convergence part. Concerning the toolkit, most of the main-intended flakes are not retouched and represents probably the main tools of the lithic assemblage.

Table 1

Technological distribution of the lithic assemblage collected during the 2018 test-pit conducted at the Sarsyan-Rostam Agha site (stratigraphic unit 6).

Products	SS 2018 (SU6) - Nb	SS 2018 (SU6) - %
Cores	35	3,77
Levallois cores	13	37,14
Blade cores	1	2,86
Bladelet cores	3	8,57
Others (flake cores)	18	51,43
Core fragments	6	0,65
Blank production	358	38,53
Wide, diverse flakes	162	45,25
Elongated flakes	22	6,15
Triangular flakes	21	5,87
Points (Levallois)	11	3,07
Small flakes	76	21,23
Blades	52	14,53
Bladelets	14	3,9
Bifacial pieces	2	0,21
Blank fragments	85	9,15
Flake fragments	79	92,94
Blade fragments	6	7,06
Undetermined fragments	39	4,2
Chips, debris	404	43,49
Total	929	100

Retouched tools represent slightly more than 10% of the blank production and are mainly made up of Mousterian points, retouched points and triangular flakes, typo-scrapers (including convergent scraper, side-scraper, double scraper) and retouched blades/elongated flakes (Tabl.2 and Fig.7). Although in a smaller proportion, the retouched tools are also composed of some notches/denticulates, retouched flakes and bifacial pieces.

We can also note the presence of some Upper Paleolithic elements (some bladelets, one dihedral burin and three prismatic bladelet cores). These products were identified within the highest part of unit 6 as well as within units 1 to 5 (not presented here). These Upper Paleolithic types elements probably come from dismantled upper layers (possibly still present to the north of the shelter within hardened layers). In any event, the recovery of Upper Paleolithic artifacts indicates that the site was also occupied during this period.

Finally, although with relatively few retouched tools and independently of the modes of production, the Sarsyan-Rostam Agha unit 6 assemblage shares many typo-technological traits with the Zagros Mousterian industries, such as those identified not far from the region at Shanidar, further to the south at Bisitun and Warwasi and more recently in the Khorramabad Valley in western Iran (Dibble, 1984, 1993; Dibble, Holdaway, 1990, 1993; Olszewski, Dibble, 1993; Solecki and Solecki, 1993; Lindly, 1997; Biglari, 2001; Jaubert et al., 2006; Bazgir et al., 2014)

The Sarsyan-Rostam Agha rock-shelter proved to be an important Middle Paleolithic site for the surveyed region. While chrono-stratigraphic contexts and cultural affiliations are often made difficult in this region limiting comparisons, the Sarsyan-Rostam Agha rock-shelter is currently and with the Shanidar cave, one of the rare preserved Paleolithic sites of the northwestern Zagros and represents an almost unique witness of early settlements of this region.

Table 2

Typological distribution of the lithic assemblage collected during the 2018 test-pit conducted at the Sarsyan-Rostam Agha site (stratigraphic unit 6).

Products	SS 2018 (SU6) - Nb	SS 2018 (SU6) - %
Unretouched (products of <i>debitage</i>)	323	89,72
Retouched tools (products of <i>debitage</i> and bifacial pieces)	37	10,28
Side scrapers	8	21,62
Mousterian points	9	24,33
Retouched points/triangular flakes	5	13,52
Retouched flakes	2	5,4
Notches and denticulates	4	10,81
Retouched blades	7	18,92
Bifacial pieces	2	5,4
Total (products of <i>debitage</i> and bifacial pieces)	323	100

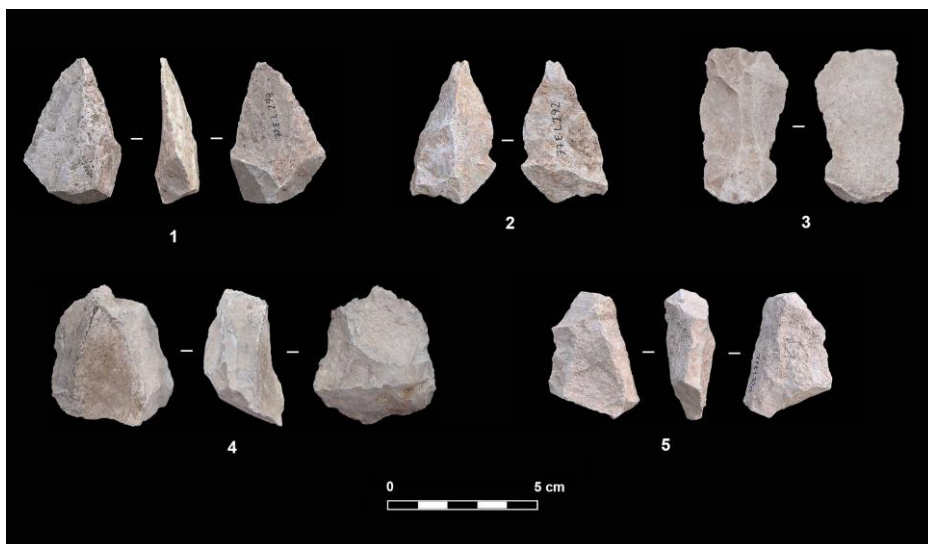


Fig.6 Sarsysan-Rostam Agha limestone lithic industry discovered in stratigraphy. **1 and 2.** unretouched points ; **3.** unretouched blade ; **4 and 5.** Levallois cores (*photos S. Bonilauri*).

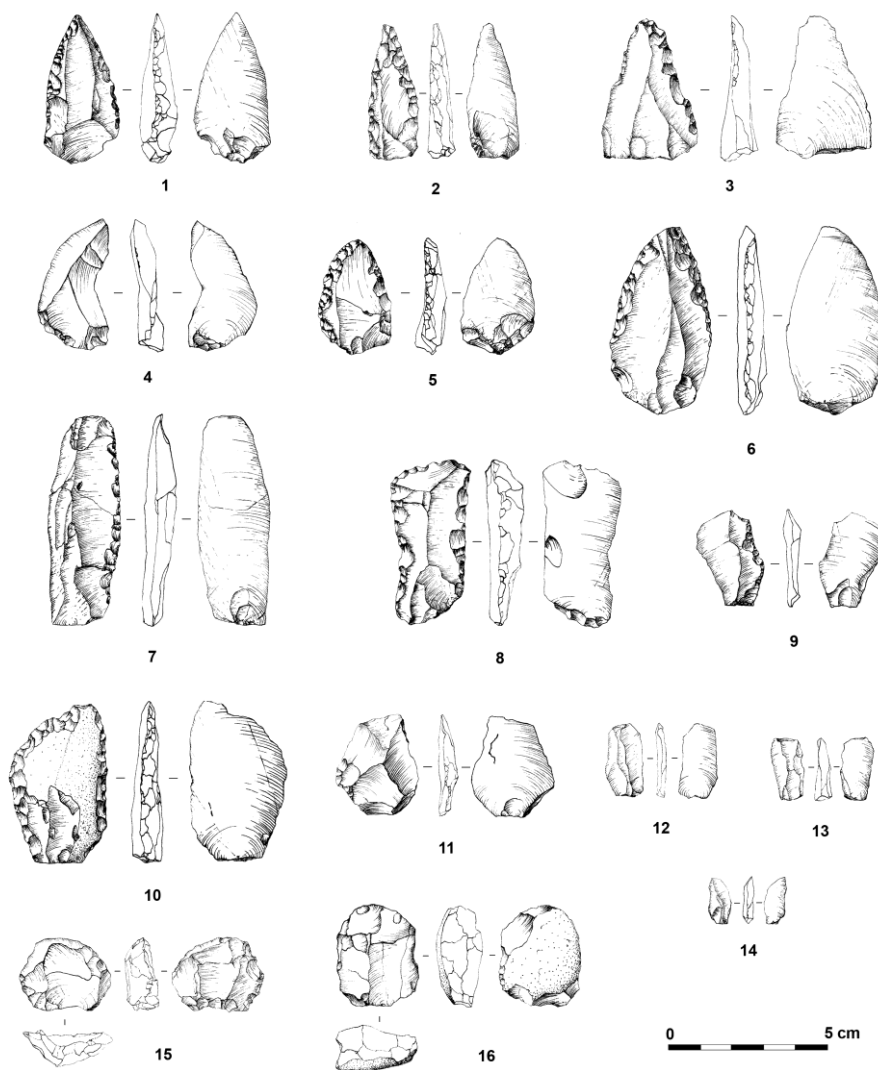


Fig.7 Sarsyan-Rostam Agha lithic assemblage discovered in stratigraphy. **1 and 2.** Mousterian points ; **3.** retouched point ; **4.** unretouched point ; **5 and 6.** convergent scrapers ; **7 and 8.** retouched blades ; **9.** retouched flake ; **10.** scraper ; **11.** unretouched flake ; **12 to 14.** unretouched blades/bladelets ; **15 and 16.** Levallois cores (*drawings I. Mesfin*).

2.2. The assemblages of Grtka Qala, Ser Qalat and Germeka (sites n°85, 86, 87 and 88)

We present together the lithic assemblages of these four localities because although they resulted from surface collection and thus likely from certainly different time periods, they have identical technological and typological elements.

The localities are all open-air sites: Grtka Qala (site n°85), Ser Qalat (site n°86), Hassana Rash Qalat (site n°87) and Geremka (site n°88). All are located in the talweg of the upper valley that today leads to Iran in the Issawe sub-district southeast of the city of Qalat Dizah. The sites are at 738 m and 801 m a.s.l. (Fig.1 and Fig.8).

Around 29 artifacts were collected from the surface (n=15 at Grtka Qala; n=4 at Ser Qalat; n=6 at Hassana Rash Qalat; n=4 at Geremka) (Fig.9). The raw material used is 52% local limestone (n=15 of 29 artifacts). The region is highly structured by the Jurassic, Cretaceous and Tertiary limestones. This raw material, of more or less good quality, was thus widely available in large quantity and in different forms, from small nodules to large blocks. The state of preservation of the artifacts studied is rather low, indicating a fairly significant degree of post-depositional movement.

Some limestone artifacts from these four localities have convergent edges (n=7) including points and ranging from 89 and 121 mm long. If the precise identification of the production methods is hindered by the difficulty in interpreting the removal scars, some pieces are from a Levallois method. The contours of these convergent products / points are not very various and are essentially of straight-straight or convex-straight delineation and are nearly all symmetrical (the distal ends are aligned with the morphological and reduction axes). Among these seven convergent products, only two were retouched, on a lateral edge for one and at the proximal ends for the other two. The technological characteristics and in particular the contours were for the most part established during the production phases, as a result requiring little or no post-production shaping (which would have been a supplementary retouching phase). The limestone artifacts also include three flakes ranging from 62 to 92 mm long. As previously, these products have little or no retouch. Finally, the assemblage contains five flake cores.

The chert/flint artifacts collected at the four localities are less common (n=14 in total) and differ technologically from those on limestone. They are unretouched rectangular or elongated flakes of small size (33 to 84 mm long). The reduction strategy(ies) used are undetermined, but appear to be less elaborate than those used for limestone. This difference may be due to an archaeological reality in which investment and intended products varied by the raw materials used or the artifacts may have originally come from different archaeological layers. However, it could also be the result of selection bias.

Despite the lack of chronostratigraphic context and probable palimpsests, the limestone assemblages from Grtka Qala, Ser Qalat, Hassana Rash Qalat and Geremka show some affinities with Middle Paleolithic industries. The presence of Levallois reduction and convergent products including points, allows these assemblages to be attributed to this broad chronological period. In some aspects, they even appear to be similar to the Sarsyan-Rostam Agha assemblage – Levallois products and points – and, by extension, to the Zagros Mousterian industries. However, they are also clearly different. Indeed, the dominant raw materials are not the same, the kinds of products are very different and the production aims are different. At first view, these assemblages seem much closer to some assemblages identified in the Levant during the Late Middle Paleolithic, particularly those oriented toward the production of convergent products (Meignen, 1988, 1998; Van Peer, 1992; Boëda et al., 1998). Nonetheless, further surveys are needed for specifying the techno-typological characteristics of the assemblages and establishing more reliable comparisons.



Fig. 8. General views of Grtk Qala (site n°85), district of Peshdar (*photos MAFGS@S. Bonilauri*)

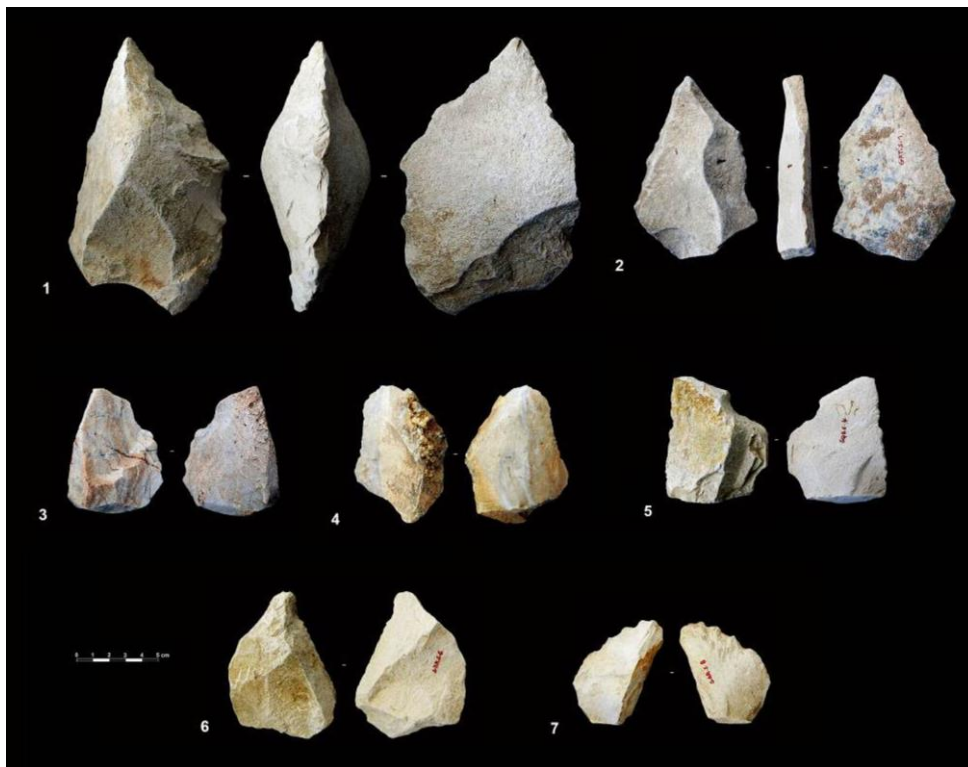


Fig. 9. Selected limestone artifacts from sites: **1 to 4.** Grtk Qala, site n°85; **5.** Ser Qalat, site n°86; **6 and 7.** Geremka, site n°88. **1.** retouched convergent piece (point); **2, 3 and 6.** unretouched convergent pieces including points; **4 and 5.** unretouched flakes; **7.** offset back piece (*photos S. Bonilauri*).

3. Paleolithic lithic assemblages

The mountain ranges north of the city of Rania (Rania district) are particular rich in caves and rock shelters formed in the Cretaceous karst networks. Some of these have yielded lithic artifacts inside or nearby. The two assemblages presented below are, by the raw materials used (chert and/or limestone) and their techno-typological characteristics, representative of all of the assemblages found in this zone. It will be seen that while the lithic artifacts discovered are undeniable evidence of prehistoric occupations, their chronological attribution remains problematic.

3.1 The lithic assemblage of Gareem Qadal 2 (site n°167)

The cave of Gareem Qadal 2 (site n°167) is located in a valley transversal to the Betwata Valley north of Rania and the Saruchawa Valley to the southwest. In the mid-mountains at 720 m a.s.l., the cave

overlooks part of the Rania Plain. Although small (ca. 8 m long and 4 m wide), it is one of the most important sites in the region given its thick deposits and the high density of lithic artifacts found in situ at the entrance and inside (Fig.1 and Fig.10).

Only eight artifacts were collected from Garem Qadal 2 (Fig.11). The raw material used is a local limestone abundant in and near the site in the form of blocks of different sizes and shapes. Two unretouched flakes and six trimmed and/or retouched pieces composed the assemblage. In appearance and based only on this small sample, reduction appears to have been unsophisticated. The trimmed and/or retouched artifacts include a cortical flake retouched along the right edge. The shaping consists of ventral removals to create a flat surface and two or three rows of retouch on the cortical dorsal face. If considered along its longest morphological axis, this would be one of the ends that were retouched. Three others pieces are technologically similar: two cortical blocks and one cortical flakes. In these cases shaping also consists of one or several removals on one face (ventral for the flake) followed by rows or fairly abrupt retouch on the cortical faces and along one or several cutting edges. The retouched pieces also include a flake retouched on one lateral edge (side scraper type) and a flake broken on its left edge and retouched on the distal end (*perçoir type*) and along the right edge (denticulate).

The chronological attribution of this small assemblage is difficult to determine. If we were to give an indication of its chronocultural placement despite the lack of information, we would propose affinities with a Middle Paleolithic. The presence of retouched tools of Middle Paleolithic type (side scraper, denticulate), the lack of technological elements typical of the Upper Paleolithic (blade/let reduction and products; retouched tools such as end scrapers) and elements posterior to the Upper Paleolithic support a preliminary attribution to the Mousterian. However, this remains a working hypothesis that must be substantiated by more detailed analyses and larger samples.



Fig. 10. General views of the site n°167 of Garem Qadal (Rania district)

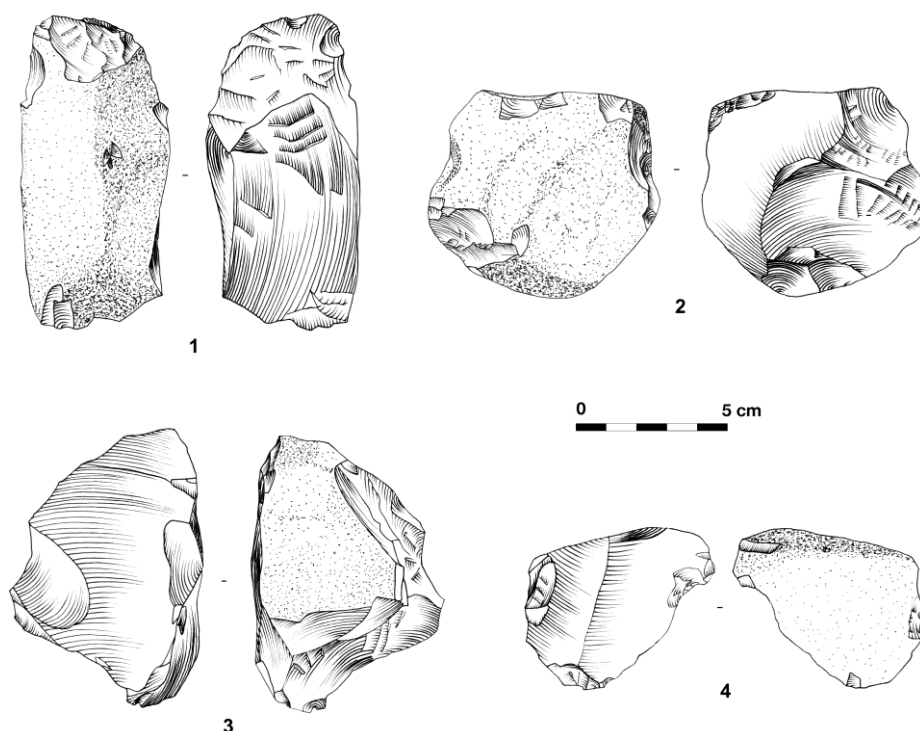


Fig. 11. Selected limestone pieces from the site n°167 of Gareem Qadal 2. **1 and 2.** trimmed and retouched flakes; **3 and 4.** trimmed and retouched blocks (*drawings E. Boëda*).

3.2 The lithic assemblage of Besara (site n° 10)

The Besara rock shelter (site n°10) is also located in the mid-mountain zone north of the Betwata Valley north of the city of Rania (Fig.1 and Fig.12).

The lithic artifacts were all discovered at the entrance of the shelter and on the nearby slope. The raw material used is a chert broadly present locally. The assemblage contains 22 artifacts, including eight flake cores of diverse morphologies (elongated, oval and orthogonal), four of which are bidirectional and four unidirectional. Also present are four retouched tools including two naturally backed pieces and two with retouched backs (Fig.13). The opposite edges are retouched. They can be entirely shaped by large flat retouch on one face followed by a row of more or less invasive retouch on the opposite face. They can also be shaped only on a single face, totally or partially, by one or more rows of retouch.

Finally, ten blanks are present in this assemblage, essentially represented by overshoot flakes, the backs being opposite to the edges. These kinds of artifacts, particularly the backed pieces, whether retouched or not, are fairly common since we find them in several assemblages.

Like the preceding assemblage, the chronological attribution of the Besara sample is difficult. The reduction strategies appear to be unsophisticated and the lack, again, of Upper Paleolithic technological and typological elements (blade/let elements; retouched tools such as endscrapers or burins) and later periods suggest a Middle Paleolithic attribution (Mousterian and/or earlier). However, these simple arguments of presence/absence of technological elements typical of different chronological periods are not adequate to make a precise chronological determination. Similarly, the basic reduction strategies observed are also insufficient since they are not necessarily synonymous with old. Indeed, such reduction strategies could have been used during any period (Soriano, 2003).

Regardless, for a large number of lithic assemblages discovered in the region, only more detailed data from analyses and fieldwork (survey and test excavations) and, here, future excavations, will be able

to contribute to the question of chronological attribution of the regional lithic assemblages and their techno-typological characteristics.



Fig. 12 General views of the site n°10 of Besara (photo MAFGS@S. Bonilauri)

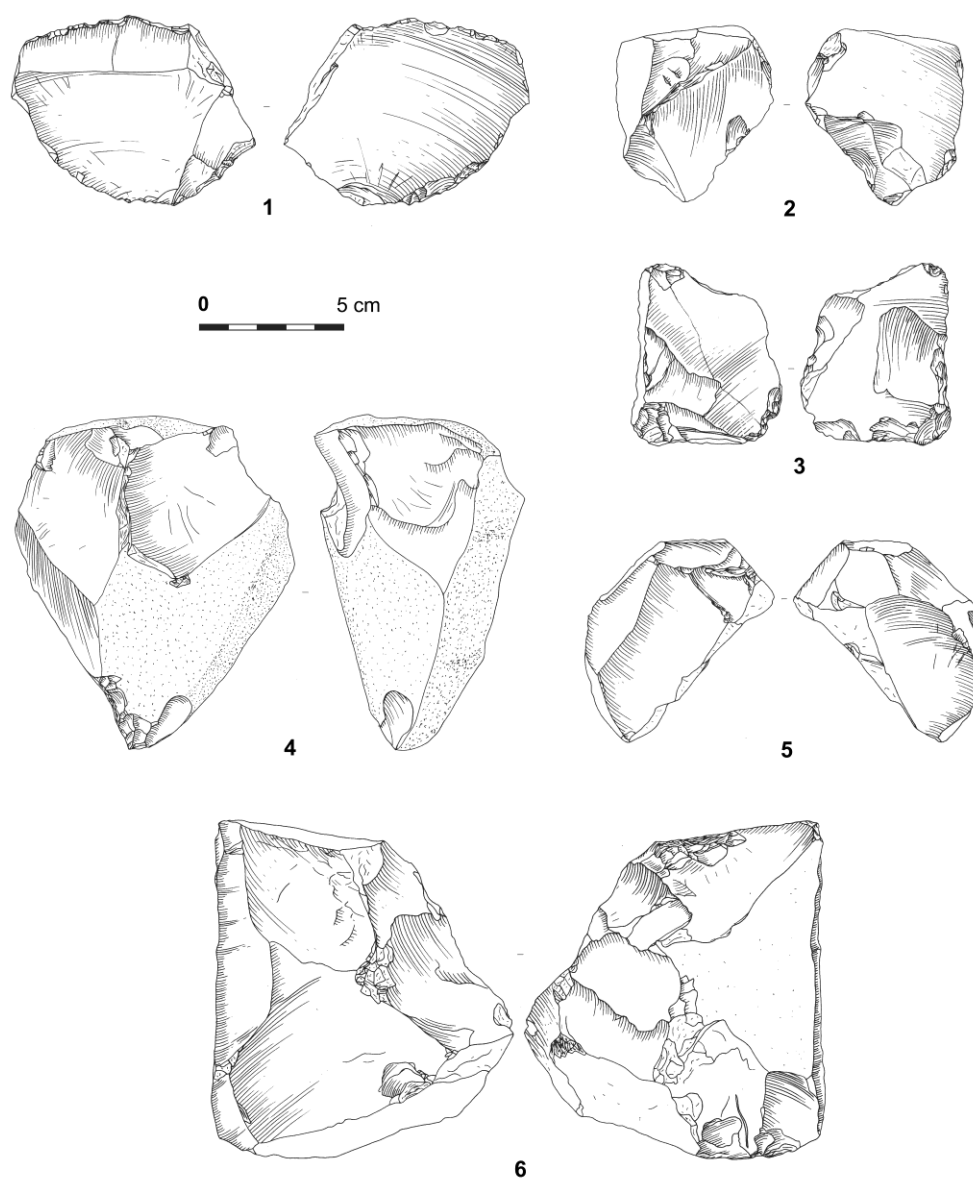


Fig. 13. Selected lithic pieces from the site n°10 of Besara. **1.** unretouched flake ; **2 and 3.** retouched back pieces ; **4.** flakes core ; **5.** plunging flake ; **6.** blade core

4. Discussion

The discovery of numerous Paleolithic sites and lithic assemblages in a previously unexplored zone in eastern Iraqi Kurdistan constitutes a significant element in the understanding of Paleolithic technocomplexes and the movements of hominins and/or technological ideas during the Paleolithic. While the data and results are still fragmentary and the assemblages composed only of small sample sizes, two points emerge from these preliminary investigations and analyses.

The first concerns the patterns of territorial occupation. The Rania, Dukan and Peshdar districts appear to have been occupied differently by the Paleolithic populations with sites found both on the piedmont and in the lower and mid-mountain zones, in rock shelters/caves or open-air. Open-air sites, however, are less common, which could be explained in part by the deposition of Holocene terraces on Pleistocene terraces and potential open-air sites.

The second point concerns the structure of the lithic assemblages, in terms of both the raw materials used and the techno-typological characteristics, and their chronocultural attribution. While chert/flint was used, limestone assemblages are also present, either almost exclusively (sites n°85, 88, 87 and 167) or associated with chert/flint (site n°77). Limestone is a raw material occurring widely in the local environment, accessible in immediate proximity of the sites in primary or secondary context. The use of these raw materials depends certainly on their accessibility, chert/flint being less widespread than limestone, but also on the production aims. Small products could be made equally on siliceous raw materials and limestone while the larger products were made only on limestone. The strong presence of limestone assemblages, some of which may be affiliated to the Middle Paleolithic, is more than of simple interest because few limestone artifacts had been previously emphasized. It is clear that the chronocultural affiliation of these assemblages is now a priority.

While such determination is often made difficult by the lack of chronostratigraphic context limiting the possibility of comparisons, the techno-typological analyses of the assemblages presented here allow proposal of a preliminary chronocultural attribution to the Middle Paleolithic (assemblages n°77, 85, 88, 87, 167? and n°10?) and more specifically to the Mousterian for one of these (assemblage n°77). The Sarsyan-Rostam Agha assemblage, share common features with the "Zagros Mousterian", a uniform entity broadly defined in the past on the basis of Iranian sites such as Bisitun, Warwasi, Gar Arjeneh and Mar Tarik (Dibble, 1984, 1993; Dibble, Holdaway, 1990, 1993; Lindly, 1997; Biglari, 2001; Jaubert et al., 2006; Jaubert et al., 2009). Although nearly unique in the current state of our research, the discovery of this site, situated geographically between Shanidar to the northwest and the Iranian sites in the Kermanshah region and the Mousterian technocomplexes in the Khorramabad Valley to the southeast, argue for a degree of regional technological stability for this period. In addition to assemblage n°77, some artifacts from assemblages n°85, 88 and 87 also have techno-typological characteristics typical of the Middle Paleolithic: convergent (points) or non-convergent Levallois products that are relatively large compared to those in assemblage n°77. Despite some typo-technological similarities, these assemblages also appear to be different from the Zagros Mousterian industries. The Mousterian of this region seem diverse testifying perhaps a succession or coexistence of distinct cultural facies and raising the question of settlement of this region during the Middle Paleolithic and the relationships between this mountainous zone and the peripheral regions. Further, if the Middle Paleolithic is fairly well-represented by the lithic assemblages, those potentially attributable to the Lower and especially the Upper Paleolithic and Epipaleolithic have not as yet been identified. Yet sites with original Baradostian/Aurignacian sequences, for example, are broadly present (Hole, Flannery, 1967; Smith, 1986; Olszewski, 1993a, 1993b; Olszewski, Dibble, 1994, 2006; Otte, Kozłowski, 2004, 2007; Jaubert et al., 2006; Bordes, Shidrang, 2009; Shidrang et al., 2016). Are equivalent sites to be found on the plain but inaccessible beneath the Holocene terrace deposits? The responses are likely multiple and we hope in the future to fill in these chronological "gaps".

Finally, and to pursue our examination of the characterization of human occupations in this region and to enrich our analyses of Paleolithic technological behavior, the next missions of the MAFGS will have a dual objective: the expansion of surveying in the Dukan and Soulaïmaniah districts and the test excavations to establish chronostratigraphic reference sequences.

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