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THE CHERTY MINE AND WORKSHOP OF KALKASHVAND PALEOLITHIC SITE IN HARSIN PROVINCE

Abstract

The difference quarters of Kermanshah like Harsin area in boundaries Ga-Ma-Si-Ao River is chief in archaeological studies from Paleolithic period in Iran. This area because of seasonal and all-time rivers has the ecological source enough. Nearby have done the first investigation of Paleolithic field Iran in Shekarchian-Bisotun cave by Kalton Stanly con (1959-60). Climatologically this area with cherty outcrop and aquatic resource has an appropriate position for abiding since before. One of dietetic challenges within hunter and gatherer society of Paleolithic period was accesses to raw substance and transition of that. Archaeologist always attended to cherty sources radiolarite and ways of exploitation from them since different periods especially in Harsin. Kalkashvand was a camping site to making of tool in middle Paleolithic and there is on Terrace of Kalkashvand River where has found 32 tools from this period. The investigation shows this site was a base camp with much mobility, workshop with a large number of makes, and the many food and raw substance. As a whole this paper tends workshop and its makes in Kalkashvand.

Keywords; Harsin, Ga-Ma-Si-Ao River, Paleolithic, Kalkashvand, Raw Substance and Stone Tools.

Introduction

In a century ago had been done enough investigations on the plain of Kermanshah which was known many variety data from Paleolithic such as shelter and open site with evidences from middle Paleolithic to Epipaleolithic. Harsin province is the east of Kermanshah. This part with desirable region and ecology states like organic sources and cherty mines provides the dwell situation in different periods. Braidwood (1960), Mortensen and Smith (1961) did the first systematic survey of archaeology in Harsin. After Abas Motarjem and Yaghub Mohammadifar (2002) detected 125 sites from different period. In 2008 Mohamad Eghbal-Chehri reviewed this place and he founded 68 sites and a few the middle-neo Paleolithic sites (2008). Although there are value records of Harsin, it doesn't excavation about yet and many research of archaeology limited to survey. Anyway around of Harsin has been worked enough.

It was in 1949 Stanly Con's excavation in Shekarchian cave the first of systematic

survey in Harsin (the ambit of Bisotun). Smith completed his work in there. He attests presence of human being in caves of the mid-Zagros from middle to Epipaleolithic. So he defines a few sites like a big workshop in the west of Harsin. Friedune Biglari, Saman Heidari and Soniya Shidrang recently recorded sites in this area from this time (Biglari and Taheri 2001, Biglari 2000, 2012, and Shidrang 2005). Between them, Do-Eshkaft cave has the most homogeneous superficial finding in the north of Kermanshah and it makes possible precise study an assortment of Mousterian. Jaubert with Biglari proceeded excavation in Martarik cave in Bisotun which that help to specify of Mousterian industry (Biglari, 2004, 2007). The tools with Levallois technique and secondary scrape were obtained from Martarik and Martariftao, as well as Skinner indicated an ample of this industry in Shekarchian and some sites (2009). Biglari (2012) recently cared about outcrops of chert and radiolarite in Harsin plain and Kermanshah which it's wrathful act. While Authors were studying old Neolithic sites (Tepe Ghasemi, Ganj Dareh, Ghlakamandbag and ...), they founded middle Paleolithic tools in the vicinity of Tepe Ghsemi in Kalkashvand village which was unknown (Motarjem and Mohammadifar 2002, Eghbal Chehri, 2009 and Mortensen & Smit 1980, 1977). We'll explain Paleolithic tools of Kalkashvand next.

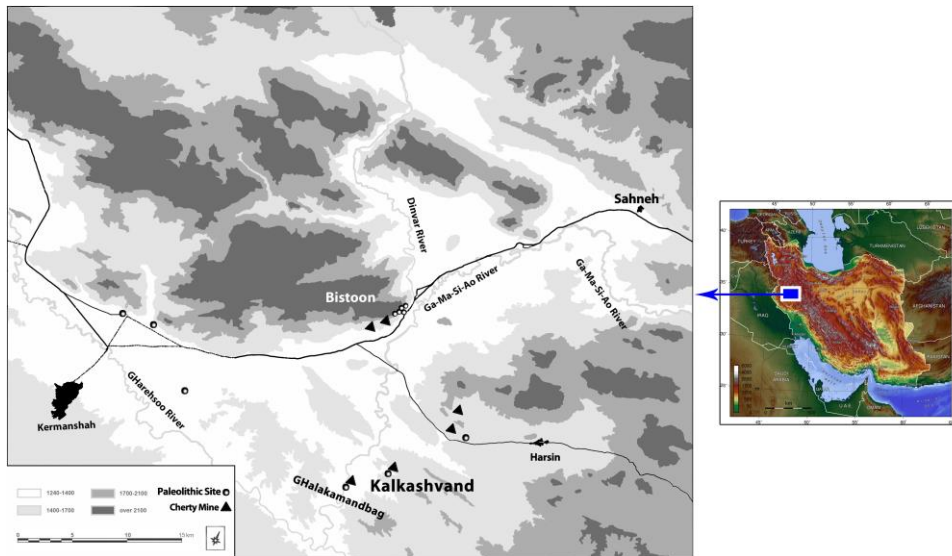
The Geography and Geological types of Harsin plain

The Highlands of Kermanshah contains affiliated plains such as Sahneh, Bisotun, Harsin, Kermanshah, Mahidasht, Ravansar and ... there are about 1350 meters from sea level and 1500 kilo meters in area. Geological view there is between stratified and high the Zagros. A noted mountain is the Bisotun-Shahu where followed from the North West to the North East (Mohammadi Ghasrian, 2012: 1). Limy structure of that cause to forming topography phenomenon like caves, continuous springs (Biglari, 2012: 12). Har-

sin province is an area of 816 km and about 1582 meters above sea level. Harsin abuts the Sahneh and Dinvar province from the north, Lurestan in the south and east and Kermanshah in the west. The streams of Nahvand's elevation are the headwater of the Ga-Ma-Si-Ao. This river passes through Sahneh and Kangavar and joins to Dinvar River in Bisotun, at last she flows into Harsin. Harsin is at an altitude of 1665 meters averagely and lowest point of there is Garhband village at 1241 meters above sea level (Eghbalchehri, 2009: 5-6), (map 1). The fertile highland of the Cham-Chamal and Harsin plain are apposite for ranching and farming. The Cham-Chamal pline is next to the Ga-Ma-Si-Ao River at a height 1300 meters as the chief of Paleolithic period. There are hills between Harsin and Kermanshah (the length of 24 kilo meters and wide 18 kilo meters) and some canals and valley along of them which end to the Ghare-Su and the Ga-Ma-Si-Ao rivers. The extent of this point is about wide 8 kilo meters at the end. There is bounded by the alluvial plain of Kermanshah. The Ghare-Su River flowed into there at the west direction and is separated the hills from the Kuhe-Sefid in the south. The Ga-Ma-Si-Ao River from the north as well, and to join the Ghare-Su River flowed to the south west path.

The Kalkashvand cherty mine

This mine is the highland of the south west in Harsin and close to Kalkashvand village. The hepatic silex outcrops (the vein of chert and radiolarite in Harsin and Kermanshah) it's very likely that used to make tools in mid and neo Paleolithic even Neolithic period. Prior studies show high potential of raw source for making of tools (Jaubert et al, 2009). We can add Kalkashvand to Paleolithic sites of Harsin (NO. 16 and Ghlakamandbag) and around of Bisotun (Shekarchian, Khar, Martarik, Mardodar and Martariftao caves) and Kermanshah (Kagiya, Varvasi, Eshkaft and Varkini) (Map 1).



Map 1. Geographical map of Harsin and separated Paleolithic sites and chert mine, Kermanshah, (authors, 2014)

The studies of the north east and the west of Harsin show the big fragment both ball and layer forms. Biglari (2012 A), found some outcrops which used in Paleolithic. The biggest and most important outcrops are cherty radiolarite in Harsin-Kermanshah which is a part of radiolarite belt in Kermanshah¹. The spectral radiolarites of Kermanshah has a stratified layer of limestone, shale and ... (Braud, 1987; Gharib and De Wever, 2010). The units of marlstone, shale and limit have with red, green and violet colors of radiolarite cherts are according to the geological map of Kermanshah (Karimi Pavand-Pur, 2009). A part of noted belt in the North West of Kermanshah is under alluvial deposits and sometimes it's obvious but it has ever seen in the feet of the Shahu highland. Raw substances used in both open sites like Bureh, Sechak and the caves of Bisotun, Martarik, Do-Eshkaft (Biglari, 2012 A: 13). We can see high quality outcrops in Harsin and Kermanshah. Where they used as workshop contains core in the first step of forming, repairing fragments, flake, blade and a few Retouched tools. Mortesen and Smith founded a

big workshop from middle Paleolithic and other findings with Levallois technique in the west of Harsin (Smith, 1986). Many evidences is that raw substances of this area has identified for making tool especially with Levallois technique since lower Paleolithic (Biglari, 2012 A: 14). The outcrop and workshop near-by Kalkashvand village is alike mine chert of Harsin-Kermanshah. According to archaeological data most likely this outcrop and natural view causes inhabitants of different period in Harsin and the periphery of Ga-Ma-Si-Ao River. Since there are many useless and incomplete tools near said outcrop, it's a workshop about 200 meters from Kalkashvand River.

The middle Paleolithic site of "Kalkashvand"

Kalkashvand is 34,208813 and 47514532 (UTM service), altitudes of 1414 meters, distance of 15 kilometers the south west of Kermansha, about 200 meters from Kalkashvand village and 150 meters from (Kalkashvand) river (map 2). The width of this area 200×500 meters with Paleolithic evidence nobody say about of them before (Motarjem and Mohammadifar, 2002: 161-162 and Eghbal-Chehri, 2009). The Paleolithic site of Kalkashvand is on an old terrace

¹ - This type belongs to the end of Jurassic and the beginning of cretaceous (Biralvand and others, 2007, Braud, 1987).

and between a cherty mine and the Kalkashvand River (map 2). While we investigated Neolithic's site of tepe Ghasemi in the west of Kalkashvand village, we found Levallois tools belong to middle Paleolithic. As well

we found a workshop beside this mine. There are outcrops of hepatic chert like this (Beik Mohammadi and Ghasriyan, 2013). We believe they were seasonal sites and participant in making tools in Harsin (map 1).

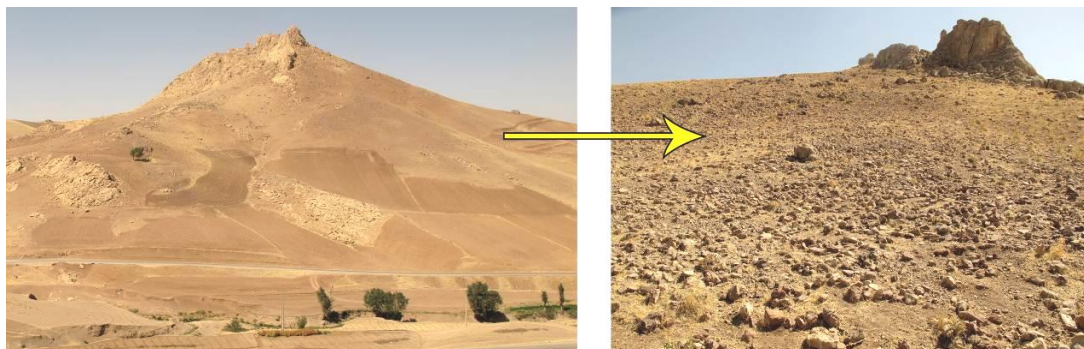


Fig 1. Min's view and hepatic chert of Kalkashvand for making of tools



Map 2. Arial map of Kalkashvand village (1), the outcrop of cherty mine (2), site (3) (authors, 2014).



Fig 2. Paleolithic's site of Kalkashvand; village (1), the outcrop of cherty mine (2), the place of site toward Kalkashvand River (3).



Fig 3. Kalkashvand River and old terrace of that (north view).

The industry of middle Paleolithic of Kalkashvand

The stone tools of Paleolithic scatter line all in around old traces of the river which demonstrates the open site with Levallois industry (fig 4). Studies show plenty of ecologic sources like water and cherty outcrop this area (the mid-Zagros) and absence of them in the former inspection. Deficiency of open site Paleolithic in spite of previous sys-

tematic surveys related to not realizing age-old stone. As a whole everywhere is a cherty outcrop is found stone tool like the workshop of Gholakamandbak near Pasar village in the west of Kalkashvand. The dispersal of Paleolithic data are limited to caves and shelters in Harsin more, but the new records (Eghbal-Chehri, 2009) confined to exist of sites and outcrops together.



Fig 4. The terrace of Kalkashvand river and spreading of Paleolithic tools between mine and the river.

Our findings include cores, flakes, points, scrapers and base data on them it's believed Kalkashvand was the site for making stone tools. Altogether we gained 32 pieces from there (fig 4). The Colour spectrum of these makings is purple chert, light brown and ashy. They have medium or good quality and all of them were made of cores from medium size (15 centimeters) to small (5 centi-

meters) diagonally also reused and repetitious retouch rarely. Surely we can say that this site is an open site or workshop, because some identified tools in around and terrace of the river is scattered thus we is in need of more research.

Repetitive retouch and revival edge is more important in typology of a stone tool. To revive edge is an economical way for re-

frain from carrying lots of bulky load in a nomadism group and open site. The Number of retouches can refer to trade of substances and reusable site or differences view of typology (Kuhn, 1995 & Kuhn, 1990: 583). Retouched tools and decrease of them can be as a respond to anthropological questions and renew some acts of ancient society (Hashemi and others, 2014, 32). Retouch is a way for efficient, repair or remake of that the first time or more if you need and it's usual to detach small piece from edge. Sometimes it's done, because of access to raw substance in mobile society hardly. In other word the society of which will be somewhere a short

time. Methodical tool need to toil and vigor to make it. This type is sharpen or handled repeatedly or occasionally is made in one time from raw substance. They are flexible (supple), revivable, deformable, process of preparation, prospective making and portable (see Torrence 1983, Hashemi and others 2014, 52), we can see from accessibility and mass of raw substance in Kalkashvand.

2 blades with free swipe platform (drastic and direct strike), 11 flakes, 14 scrapers, 5 points, (32 tools altogether). Removal tools from cores are discoid, single-platform, multi-platform (diagram 1, figures 1-4).



Figure 1. Blades have been made by Levallois technique, Kalkashvand, Harsin (authors 2015).

2 paces of 2-face blades are retouched in every side (reversal retouch to order K.K. 17) and a pace of big blade (fig 1). 11 flakes are the next step our set (diagram 1); Not retouch (maybe scraper, K.K. 28), 2 flakes (to remove with former volition and revers retouch, K.K. 32 and K.K. 04), the flake isn't retouched (K.K. 1), and another flake is removed from core (high temperature or heated, K.K. 5), the flake (useless?) the first remove from core (K.K. 23), 2 pieces of debris flake to use of core (to exhaust stone from a core, secondary remove, K.K. 21, K.K. 24), a crenulated flake which has cortex (K.K. 2), a retouched flake with reversal retouch and

direct-platform, the abrasive flake with ordered attrition (K.K. 14) (fig 2).

14 scrapers of Kalkashvand belong to the first step (diagram 1) which include 1-face scrapper (K.K. 3), lateral scrapper with ordered attrition (K.K. 16), 2-face scrapper like previous scrapper (K.K. 22 and K.K. 25), 2-face scrapper with unordered retouch (K.K. 7 and K.K. 15), 2-face scrapper with deep retouch (K.K. 8), circular scrapper (K.K. 29), circular scrapper with scattered concurrent (K.K. 18), convergent scrapper (K.K. 20 and K.K. 31), end lateral scrapper in one side (K.K. 9) and crenulated scrapers (K.K. 11 and K.K. 12) (fig 3).

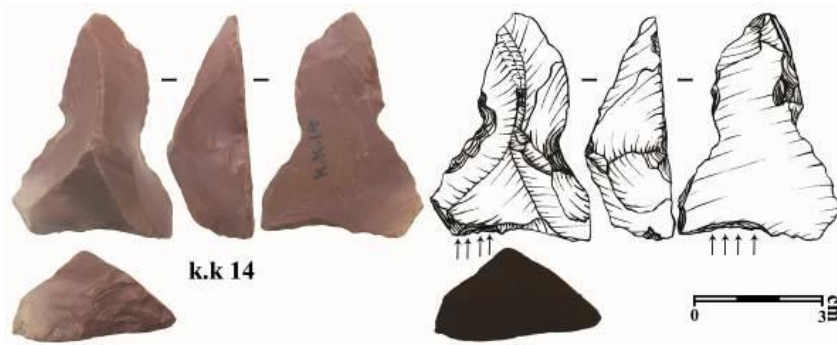


Figure 2. Flaks have been made by Levallois technique, Kalkashvand, Harsin (authors 2015).

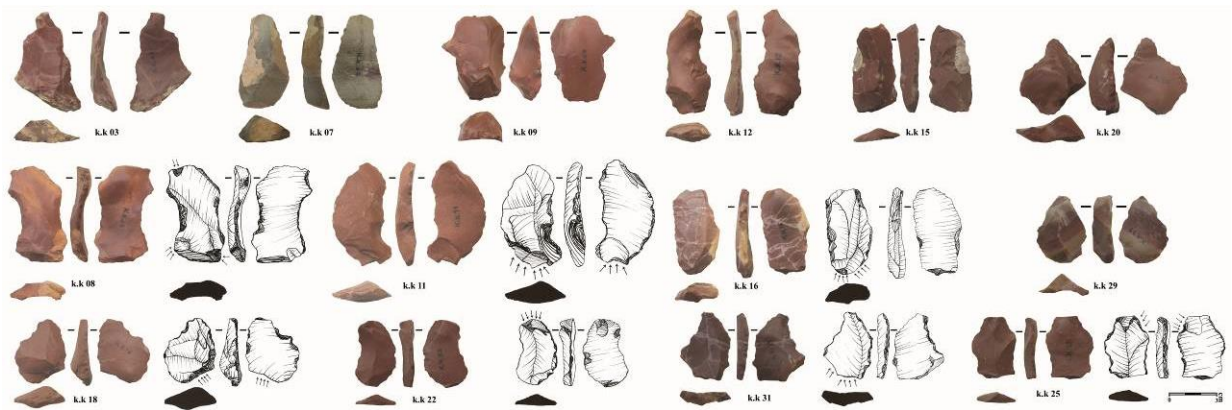


Figure 3. Scrapers have been made by Levallois technique, Kalkashvand, Harsin (authors 2015).

5 points are symmetrical retouch from 2 sides (K.K. 26), reversal retouch (K.K. 30, K.K. 27), ordered retouch (K.K. 19 and K.K. 13), and many tools were made to direct tap technique. Among them centralist core and discus form are more. Some paces of cores were thrown out while were prepared to use them. This set is kinds of retouches especially direct retouch. Although is ample is cherty source but didn't retouch repeatedly. The scrapers of Kalkashvand are 1 face,

double-side scraper, end scraper and concurrent (figure 4). There are tested rubble and cores are scatter. In addition flakes with disordered, reversal retouch and others. Mousterian industry of Kalkashvand (small, radial, semi-radius, parallel, Levallois and cores) is like cave and shelter findings in the mid-Zagros (see Biglari 2003 and Dibble 1984). Use pattern of stone sources and limit of exploit between Neanderthal societies were in the west Asia and Europe (Biglari

2012 A). With regard to cherty mine and the spreading of that about Paleolithic sites many of used stone sources were indigenous and we must be done targeted survey. This work

can help to recognize access ways crude material by Hominids in part of Harsin-Kermanshah.

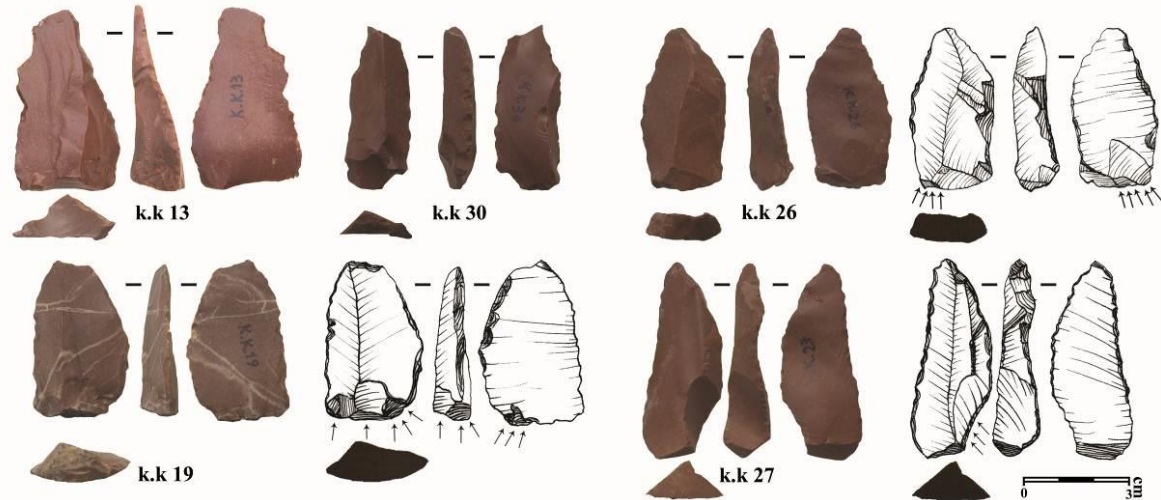


Figure 4. Points have been made by Levallois technique, Kalkashvand, Harsin (authors 2015).

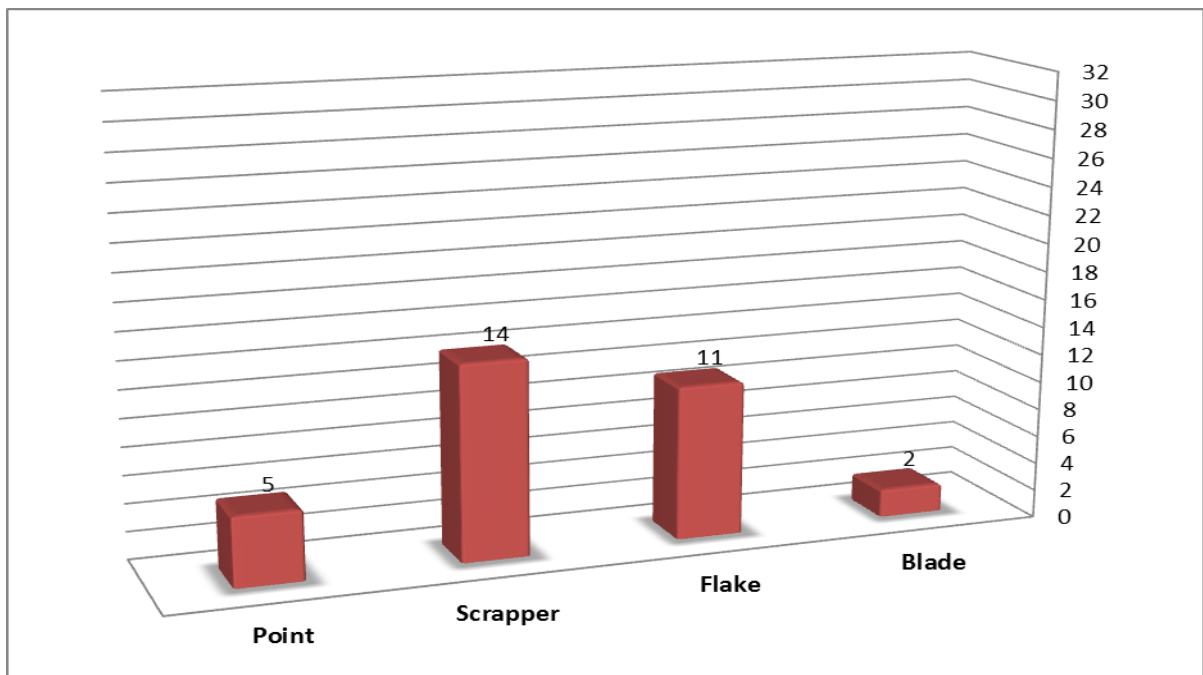


Diagram 1. Ample blades, flaks, scrapers and points from middle Paleolithic (authors 2015)

Result

Kalkashvand was one of the workshops about Paleolithic period. The extent of movement and attendance of human beings who makes tools in open site. Open workshop and spreading of different tools from there to Margin of river are signs of activities of human which in many cases it does not matter. Paleolithic site of Kalkashvand among caves

and sites of Bisotun, Mahidasht, and Harsin’s plain has a good situation for archaeological surveys especially open sites since middle Paleolithic. The cherty mine and river had most important aspects of society forming in the past. This situation shows dependence of water sources and cherty mine. Since it was easy exploitation of variety stones with low quality, more of them have light retouch.

Some attitude as limit of used source are similar to other sites in Harsin's plain (like Paleolithic site of Gholakandbag). Finally we dealt practice and typology of Paleolithic industry and traits of stones, mine and workshops also acts of Paleolithic society, states of mobility from covert place like caves and shelter to bivouac or seasonal camp.

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