

Pole-dokhtar landslide; implication one of the most complex and greatest landslid in world

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Abstract

The study of area is a partion of folded – zagros zone which geomorphologically position located in middle zagros in south pole – dokhtar city . in lorestan province . In vestigation in area to indicate amega failure at north limb kabir kohrang. This phenomeno to called seymareh landslide by learned persons. in the area a partion of north limb of kabirkuh which to be formed of : Ilam , sarvak and pabedeh . Gourpi formation (meso zoic) and Asmari-shahbazan formation by various and mrgent of stress (earthquake) . Geology and topography in the area with average, 15km width and 8 km Length and 300 meters thickness displacement at 20 km and settle mpper adjaceat area.

Key words: *seymareh, landslide, kabir–koh–range, pole- dokhtar.*

Introduction

Scientific and complete landslide phenomenon in today world from different sights is important.

Landslide is the slides of the earth of the site of gradient or falling amass of stone or combination of stone and soil (shariaty afari 1375).

Also the landslides shows that an order of the phenomenon originally in the name of mass movement (moves that depends on the mass) they are mentioned different.

Factors the same as specialty of geology (lithology, rate of aeration structural and earthquake) the hydrology conditions, topography situations.

Morphology and climate is effecting to stability of a gradient and can cause landslide.

(Shoaei & anyeli et al. ahzyomian 1998-2004)

The phenomenon landslide in the south west of Iran has been much and it can be mentioned in siyahkuh.

Dena, Oushtorankuh, kabirkuh and mongeshtkuh (Izeh) can be mentioned because of their famous and back ground.

(Sayar pour and ghobadi 1378)

One of the ancient and important of this phenomenon is big landslide of seymareh (with the width) of 64 miles that it has been happen in the south west of pole dokhtar.

This earthquake has not been as big as other areas and also in comparing with other landslides of Pamir, Alp, and Middle East is very marvelous. The biggest anticlines of Zagros the same as Kabirkuh because of folded and the crash of sheet Arabic and Iranian with the rate of cm/year (Alavi-1991).

With the process of north west – south east in the extensive area from west to west of Iran it has been progressing.

The instability of tectonics at this area, and the existing of Asmari lime with the high slope and situation of it on the unstable sheets and enormous of gap and sutures that is very suitable for landslides and many of blocks landslides in the height area of Kabirkuh (especially in the area of Seymareh pool and the Darehshahr area) in the formed Asmari has been fallen. Because of the big landslide Seymareh the big sheet of Asmari maker with the length of fourteen km. and the width of 300 m from the limb of Kabirkuh has been separated and has moved to the slope of the mountain. (Ghazban 1385).

Also the sheet vibration in the Asmari lime with high slope in the south of Dave share has been happened by the estimating about 800m³ from the Asmari lime has been flown in the Seymareh valley and only a catastrophe move or mere speed is able to move the same volume of big stones to a far distance (Watson & Wright 1969).

The material scope this landslide at first was known as moron (demorgan 1895).

But after evaluating the original of these sedimentation was observed

(Falcon & Harrison 1938) (Harrison & Falcon 1937).

- The geology and clay-wall area for study:

the area that is used for study between the east length 47 degree and 37 minutes till 47 degree and 47 minutes and 33 degree till 33 degree and 3 minutes north at the distance of about 5 km south of pole-dokhtar with the approximate 300 km² with maximum length 20 km and maximum 15 km the Seymareh river is going through it has been situated (figure 1).

This area with name has been mentioned the pole-dokhtar landslide is called to a total broken stones that is because of vibration north limb Kabirkuh that has been fallen on maker Gachsaran.

Because of geological that studying area is at the point Zagros folded with big anticline and big syncline they are arranged. With the 150 till 250 km in the north–west and south–east has been situated.

(Darvishzadeh 1380, Aghanabzti 1383)

So that it from south and west south to Chenaran anticline and the Chenaran Mahore and Gachsaran and from west to plates between Cham- mehr point and is limited. The formed lithology landslide is originally performed Kabirkuh and for this reason for considering the landslide is necessary.

The clay–wall column Kabirkuh and sedimentation 2 a group is divided resistance.

Asmari lime makers and Bangestone that has a very landslide potential resistance exists and makers Pabdeh, Gourpi shills and Garu unit as an un resistance and flexible can be named. The performed makers with the area of studying are the same as : sarvak , Ilam , Gourpi ,Pabdeh, amiran , talehzang , kashkan , asmari , shahbazan, and Aghajari (Mac lead 1970 , Darvishzade , Aghanabati 1383).

Sarvak maker is extensive and with high width in the south area is limited for kabirkuh , anticline and it's appearance is on the shale makers and its upper maker is on the mania lime llam .

This maker has shown it self from the other makers and it has folded at the longest anticline kabirkuh has been seen. The Illam maker obviously can be separated from sarvak at south and west south landslide and and at the limb of the kabirkuh.

In the pole-dokhtar landslide there is no any evident of this maker. Geography formation north lake kabirkuh is same as a tribune.

At the time of landslide the gourpi system has been affected but because of erosion signs. It has not been seen at landslide earthquake this maker has not been seen at kabirkuh and instead of it pabedeh is obviated the kashkan formation is located at the alongside of kashkan river and it is formed from conglomerate stone, sands, silt and red stone. At the area of study especially the landslide of pole-dokhtar there is no any sign from broken stones. And there is not any sign from the kashkan systems. The formation of pebedeh at kabirkuh has some appearance, but at the anticline halehkhuh and chenaran, there is not any appearance and buy the amiran makers.

Talezang and kashgan. It has been replaced the

Formation shahbazan at kabirkuh and also the anticline of kabirkuh has been shown at this situation. And the pole-dokhtar particles error moistly has been found at this place.

And at the north of seymareh river and at the of the landslide , the original parts and broken stones enable found the main broken parts the same as cubic square or cubic rectangular the size of stones is a bout some centimeters till 10 meters and from some grams till hundred of tones .

In the raining season, that the level of under ground landslide water is coming up some of this hole is fuelled with water and the water remains at them until the first dry season (Alimardani 1380).

It is necessary to be mentioned that the pole-dokhtar landslide is located under the jaydar plain.

That the depth of them has been found by drilling of the water holes. In some places that the depth of landslide is few and the maker gachsaran is located under of it the sym toms of landslide and pressure is on it.

Landslides obviously are one of the main geomorphic processes that lead to slope rarest.

How are as has been noted by idea and okunishi (1983).

The geomorphic significance of landslide or the average rate of denudation has most been evaluated because they occur irregularly and discontinuously in time and space. In spite of this, landslides researches can reasonably estimate the volumes of most individual large landslides and they know that landslides triggered by major earthquakes or volcanic activity can denude and hundreds or even thousands of square kilometers of earth surface. For example, keepers (1994). Has modeled the long-term sediment production of earthquake – triggered landslides for 12 seismically active regions. His modeling indicated that rates of sediment production by earth quake induced landslides have been very high ($200\text{m}^3\text{km}^2/\text{yr}$).

In four of the studied regions. Less is known a bout rate of recession of natural Slopes that are affected by many smaller landslides acting over larger areas. Particularly those caused by heavy rainfall. Modeling methods for expected slope retreat have been_ offered by Mitchell

and bubezel (1980). And methods for expected slope retreat have been offered. Slope retreat due to landslide actively from that due to erosion and other factors.

Such studies of landslide – caused slope recession are presented in tables 1 it must be remembered that it is difficult to separate slope recession.

By noticing to the map of landslides extensive map of Lorestan province. The most concentration of earthquakes is in the North – and East north and south and west – south are situated.

The south and west – south portion of Lorestan province the area affected by mega – failure of Kabirkuh the Seymareh earthquake with more probability

They are caused by the mega–failure in Kabirkuh. This Earthquake in Kabirkuh is one of the biggest earthquakes of Zagross Mountains.

This earthquake has fallen at the Sefidghaleh village at the 2 km distance and also from the earthquake total with the distance 1.5km from the limb north Kabirkuh. That the rate of landslide of it is about 1.5km and its area is about 1.5 kilometer square. The broken stones and parts of it are confirmed from an Asmari, Shahbazan and with the maker Aghajary evaporation has been a rounded and by fact it is on the landslide.

It is necessary to be mentioned that the distance between Ghalehsefid landslide and total Sefid with wave action serving as the primary trigger landslide, activity is the main process in the retreat of coastal cliffs.

The most common landslides types in the failure of coastal cliffs are rock–and soil fall slides and avalanches.

However, topples and flows also occur occasionally many examples of coastal cliff retreat have been documented in the literature table 2 presents several of the best- documented.

Examples in terms of quantitative measurement of retreat, with values being given in meters prayer of cliff recession. The amount of retreat is based primarily on the type of geologic material from which the cliff is composed and the strength of wave action the values in table a range from approximately is composed and the strength of wave action. The values in table arrange from approximately zero to thousands m/yr.

With the low values generally being for cliffs composed of resistant rock and the higher values for cliffs formed of very soft rock or soils (mostly glacial drift).

Landslide Kalegah – this landslide is about 3.5km in the south of Kale village that it is about 21km long and with of 2.5 km and about 20km. Landslide Darehshahr 3 and 12km in the west of landslide Darehshahr 2 with approximate 52.5 km . and maximum moving medium 3.5 km inside the limb north Kabirkuh , on the maker Ilam Gourpi and Pabedeh has been fallen and the substance of its combining particles are made of lime, stone. The lake of Darehshahr: this lake is one of the biggest and longest lakes that there has been happen Pole-dokhtar landslide. The long of it is about 40km and its width with medium is about 6km.

That there is about 4 islands in it. This lake from East is to Heloush and from west to Talk Hob is connected and from the south by the north Kabirkuh limb and from the north by the organization of Gachsaran is surrounded.

The water of this lake is from river Seymareh .

Conclusion

By noticing the statement the results are as bellow:

in the area of kabirkuh study , there has been happen about 9 landslide and the most important of them is the landslide of pole-dokhtar .

That is the biggest and complicated block landslide that has been known in the world.

The entire landslide has been happen of the long side of mega – failure of kabirkuh and it is movement and it has been caused with the help of reasons geological topography is very big accident.

Because of this pole-dokhtar landslide many lacked about separating from each other has been formed.

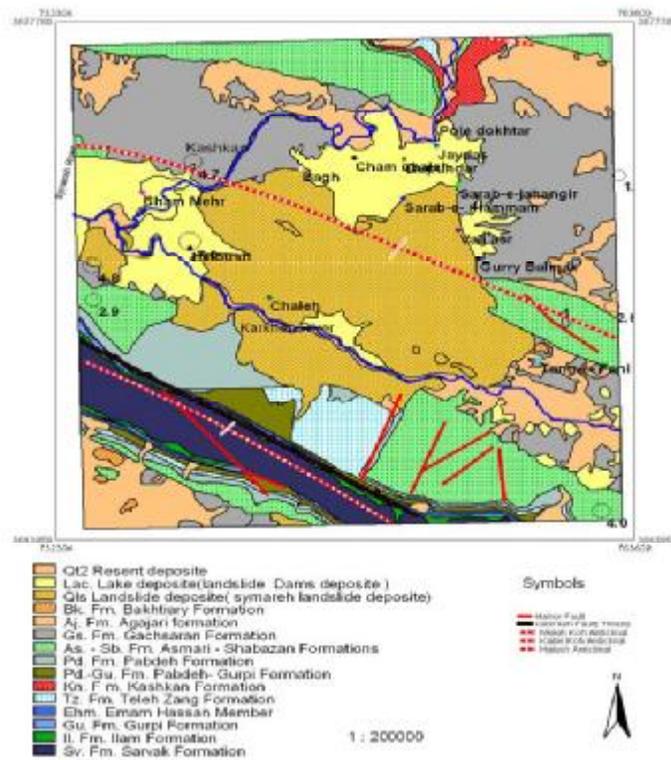
So that, they are linked to each other so that, all of them can be named seymareh big lake and also there are eleventh pole of pole-dokhtar that they are remaining from this big lake.

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Landsat Image of seymareh landslide



Geological map



Rock falls in jaidar plain