

Introduction of Echinoids species in Kariz Bolagh area (SE of Fariman)

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Abstract

*The study area is located in SE of Fariman. Its lithology mostly contains polymictic conglomerate which contains igneous, Metamorphic and sedimentary clasts. Although limestone beds which intercalated with gypsum and sandstone thin beds are observed. Some echinoids such as *Echinolampas* sp., *Eupatagus* cf. *deitiellii*, *Schizaster* sp., *Bivalvia*, *Gasteropoda* and *Nummulites* Eocene in age are presents.*

Introduction

Based on petrography study different facies such as polymictic conglomerate (S and P, 2001) litharenite and carbonatic rocks as packstone (Danham) has been identified. The most carbonate rocks contain fossils.

Echinoids have a robust, internal skeleton which are composed of numerous, fixed, calcite plates. Instead of arms, the test has five narrow zones formed from perforated plates through which the tube feet emerge. These porous segments alternate with broader areas that lack pores. The anus is on the upper surface and is surrounded by a double ring of plates. The mouth is on the underside. The external surface of the test is covered with the spines and pedicellariae, tiny spine with pincers that remove settling organisms.

Echinoids can be divided into two main groups:

- The regulars which are rounded forms. These groups are always surface dwellers and usually feed by scraping seaweed from rocks using a complex jaw apparatus known as Aristotle's lantern. In this type, articulated spines enable the animal to move slowly across the substrate aided by the tube feet.
- The irregulars which are flattened and heart shaped echinoids. These groups are often burrowers, and their spines are generally shorter and more densely spaced. The tube feet are adapted for respiration, forming tubes that connect the animal with the sediment surface. (Milsom, C. & Rigby, S. 2004)

Systematic description

Echinolampas Gray, 1825

Echinolampas sp.

Description: In this genus the test is in medium size, subcircular to subovate in outline, domed in profile with relatively flat adoral surface. Apical disc subcentral to anterior; monobasal, with four gonopores. Petals well developed; straight or bowed and open distally. Pore-pairs small, subconjugate, with a varying degree of transverse elongation in the outer pores. The two columns of pore-pairs in each petal of unequal lengths; pores beneath petals single. Peristome subcentral, pentagonal, transverse, wider than long. Periproct inframarginal and transverse; not sunken.

Remarks: in the founded specimen, the anterior part and the apical disc are covered by sediments and didn't allow us to identify it in details. But, according to the simulation for this specimen the main remarks are as follows: the ambulacra (anterior-right & posterior right) are preserved as well. The pores pair on the mentioned ambulacra is preserved as well also. The mouth and anus are well reserved. The tubercles are visible on the adoral surface. Its length is about 6 cm.

Schizaster L. Agassiz, 1836

Schizaster sp.

Description: In this genus the test ovate with deep anterior sulcus; slightly pointed to rear. Apical disc ethmolytic, with 4 gonopores. Anterior ambulacrum deeply sunken; pore-pairs in adapical portion large and specialized. Other ambulacra also deeply sunken, anterior petals longer and more flexed than posterior petals. Periproct small and marginal, on near-vertical truncate face. Bound by Iamb. plates 5a/b on oral side. Peristome opening facing anterior; kidney-shaped.

Remarks: in the founded specimen, the posterior part is omitted by the erosion. The anterior and also the posterior ambulacra are filled by sediments so, we couldn't check its pair pores and the apical disc for identifying the species. The adoral side is covered by tubercles. No main tubercles are visible on the aboral side. The plastron is well preserved in this specimen. Its length is about 4.5 cm.

Eupatagus Agassiz, 1847

Eupatagus cf. *dainellii* Checchia-Rispol

Description: In this genus the test ovate without anterior sulcus. Apical disc ethmolytic, with 4 gonopores. Madreporic plate projecting well posterior of the other apical disc plates. Anterior ambulacrum narrow and flush; pore-pairs small, simple isopores. Other ambulacra petaloid and flush. Petals distinctly bowed and tapering adapically. Periproct large; on short vertical truncate face. Peristome large and kidney-shaped.

Remarks: in the founded specimen, the main tubercles are not preserved as well on the aboral and adoral sides. The ambulacra and the pair pores are rather preserved. The apical disc is very well preserved also which led to the identification its species. From this species, two specimens are gathered which their length is about 4.5 and 3 cm.

Conclusion

The main results are as follow:

1. The main lithologies are: Polymictic conglomerate and carbonates and ravelly sandstones and gypsum.
2. Three genus and three species were identified in the paleontological studies.

Reference

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1A



1B



1C



2A



2B



2C



3A



3B



3C



3D

PLATE1

1. *Echinolampas* sp., A: Aboral View B: Oral View C: Lateral View

2. *Schizaster* sp., A & B: Aboral View C: Oral View

3. *Eupatagus* cf. *dainellii*, A: Aboral View B: Oral View C: Lateral View D: Anterior View