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Upper Cretaceous and lower Paleogene benthic foraminiferal paleoecology from north-eastern Tunisia: El Melah section

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As an impact of the bolide and ejecta falls at the K/Pg boundary the planktonic Foraminifera have suffered sever mass extinction. However, no small Benthic Foraminifera species mass extinction at the K/Pg boundary has documented. Nevertheless many species have showed disturbance. The Maastrichtian assemblages may be different from those of the lower Paleogene by their species content, diversity and frequencies. At the El Melah section, the small benthic foraminifera indicate upper bathyal environment, and manifest significant faunal turnover.

Until the uppermost Maastrichtian, their assemblages are highly diversified, with 109 species. They are dominated by endobenthic morphotypes (72 %). At the K/Pg boundary, although 34% of them seem to disappear, but only few species have really extinct such us Arenobulimina obesa. Nevertheless, the majority of species persist elsewhere at the Danian (e.g. Gaudryina aissana, Gaudryina inflata, Tritaxia midwayensis, Coryphostoma incrassata).

At the lower Danian, the survivor Maastrichtian species are of 66%. Some of them disappeared temporary. Three survivor species were eclipsed during the Guembelitria cretacea zone (Globobulimina ovata, Praebulimina carseyae and Anomalinoides welleri) and 27 other species were diminished during the Parvularugoglobigerina eugubina subzone. They are composed of both calcareous fauna (e.g. Bulimina rugifera, Bolivina deccurens, Anomalinoides midwayensis, Dentalina colei, Marginulina cf. glabra) and agglutinated fauna (e.g. Spiroplectamina knebeli and Saccamina placenta). Throughout the Parasubbotina pseudobulloides subzone, 15 others species were progressively disappeared. They are oligotrophic and low oxygen tolerant. About the Masstrichtian species Gaudryina inflata, G. pyramidata and Tritaxia midwayensis. These species seem to be more trophic exigent.Besides, at the lower Danian, 27 species seems to be appeared. Few of them appeared really (e.g. Spiroplectamina dentata, Dentalina vertebralis, Stilostomella plummerae and Gavelinella danica). Among them especially Gavelinella danica is considered as oligotrophic tolerant. Some other species known from the Maastrichtian elsewere in the outer shelf such us Gyroidinoides globosus appeared at the Sejnene area where the bathyal environment was located later at the lower Danian.

Consequently, the benthic Foraminifera did not suffer massive extinction but their assemblages underwent a significant faunal turnover. The sudden reorganisation of benthic foraminifera assemblages at the K/Pg boundary reflects important environmental changes. These changes are compatible with the catastrophic scenario induced by the large asteroid impact.