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Osteological Markers of Malaria

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Malaria is an acute and chronic disease caused by a parasitic protozoan, the *Plasmodium*. Five species infect humans and one of them, the *Plasmodium falciparum*, is the most attested in the past by biomolecular research (1). Recently the connection between malaria and various skeletal and dental lesions like *Cribra Orbitalia* (2, 3), *Cribra Femuri* and Hypoplasia (4) was supposed, already related with nutritional deficiency during development. The aim of this study is to verify this connection comparing osteological and biomolecular data. Samples from Nord-West of Sardinia were examined: four necropolis ranging from the Prenuragic period (3000 BC) to Middle Age (1400 AD). The necropolis underwent analysis using standard anthropological methods. To verify the presence of *Plasmodium*, samples from each necropolis were analyzed using an immune-chromatographic approach; only the fragment from Nuragic period showed a positive signal to *Plasmodium falciparum*. *Cribra* were evaluated according to a scale present in literature for Orbitalia (5) and Femuri (6); to better evaluate them, each pathological sample underwent radiographic and TC analysis. Crossing malaria and osteological data we can see that hypoplasia seems not to be related to malaria because it is absent when there is the *Plasmodium falciparum*; on the contrary, Cribra seems to be related to *Plasmodium falciparum*, especially *Cribra Orbitalia* were the most severe and the most common. Thanks to our data, we can say that osteological diseases like *Cribra* can be used to diagnose ancient cases of malaria.

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