ROUNDWORM EGGS IN A MEDIEVAL SKELETON FROM ABRANTES CASTLE, PORTUGAL

Luciana Sianto1,2*, Vítor Matos1, Davide Delfino3, Filomena Gaspar3, Gustavo Portocarrero3

1DCV/CIAS University of Coimbra, Portugal; 2ENSP Oswaldo Cruz Foundation, Brazil; 3Abrantes Municipality, Portugal

*corresponding author: lucianasianto@gmail.com

Introduction

The castle

The oldest known human occupation of the space where the castle is dates back to VIII-VII centuries BC. The space was abandoned during Roman times and it was occupied by Islamic forces for a short period around the XI century A.D. In 1147, during the Christian re-conquest war, the castle was incorporated by forces in the service of Dom Afonso Henriques to the Kingdom of Portugal and donated in 1173 to the Order of Santiago. The castle was successively residence of the counts and marquises of Abrantes, and military base. Today it is a tourist area1.

The church

The Church Santa Maria do Castelo is located inside the fortification. The earliest reference to this church dates from 12151 and it was one of the intervention areas during archaeological excavations of the project CASTAB in 2015.

Results and Discussion

The two skeletons were identified as adult males (30-45 years of age). Paleopathological studies are ongoing. Control samples from cranium of both skeletons were negative for intestinal parasites. Roundworm (Ascaris lumbricoides) eggs were found in UE 608, in a concentration of 50,21 eggs per gram. Most eggs were partially destroyed, and those that remained unbroken, showed signs of destruction of the shell. Roundworms are geohelminths therefore their biological cycle demands a period in the soil so the eggs can become infective. The eggs are very resistant and remain infective for decades in the soil2. This is one reason why this parasite is commonly found in archaeological material from Europe. It is usually associated with the lack of hygiene, specially in the Middle Ages3,4. The transmission is person to person by contact with feces from someone infected3. The agglomeration of people inside city walls and the use of feces as fertilizer in agriculture, common at the time, contributed for dissemination and permanency of this parasitosis for long periods.

In this study the concentration of eggs was similar to current studies in other regions of Portugal but lower than others available in Europe7. Explanations may be in cultural habits such as alimentation and medical treatments as observed in studies in North America and Brazil8-9. Another explanation is taphonomic processes as indicated by the state of the eggs found. Studies evaluating the influence of taphonomic activities in the conservation of helminth eggs in human burials are recent but fundamental to understand intestinal infections in the past10. Few authors quantify the number of helminth eggs in paleoparasitological studies, making it difficult to compare these data in different regions. Despite the small number of samples of this study, we hope that it will contribute with others being conducted, aiming a better understanding of the correlation between taphonomy and abundance of helminth eggs in the past.

Methodology

Two skeletons (UE 607 and UE 608) were located outside the church area, dating from the 15th and 16th century. Samples of sediment were taken from the pelvic girdle and cranium and taken to the laboratory of the Department of Life Sciences, University of Coimbra, for paleoparasitological analysis. A small portion of each sample was rehydrated with commercial Lycopodium tablets in a 0.5% trisodium phosphate solution. After 72 hours the swifit technique11 was applied to remove sand and the microfossil remains were centrifuged at 2500 rpm. For parasite analysis, at least 20 slides of each sample was scrutinized in light and polarized microscope at 100 and 400 magnifications.

Financial support: CNPq 204156/2014-0; CIUDS Fundos Nacionais Ptiei-01/SADG/UT9283/2013 FCT; Abrantes Municipality; IF/00184/2014

References

2.遺伝学の新現象、土壌寄生虫の検出と築造 influencia do parasitismo helminthic em humanos, 1991. (São Paulo, Brazil: Fundação de Amparo à Pesquisa de São Paulo.)

Church Santa Maria do Castelo, Abrantes

Castle of Abrantes, city of Abrantes, Portugal

Ascaris lumbricoides egg