Cell Genomics

Preview



The origin of the Carpathian Avar elites revealed

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In the sixth century, the Avar elites established themselves in the Carpathian Basin as evidenced today by the astounding archaeological sites with exquisite grave goods made of silver and gold. Recently reported in Cell, Gnecchi-Ruscone et al.¹ obtained paleogenomic evidence from Avar sites in Hungary, placing the Avar elites' origin in Mongolia and confirming their own historical claims.

The field of paleogenomics-that is the analysis of ancient DNA obtained from archaeological and paleontological remains by high-throughput sequencing techniques-has been shown to be extremely useful as a tool for understanding the past. Since the early 2010s, researchers started obtaining detailed genetic information from DNA conserved in ancient biological remains, from ancient humans and hominins to extinct megafauna. However, the paleogenomics field has come a long way since the first ancient genome was published in 2011.² While the first ancient DNA studies were centered on the analysis of the genome of one individual, the cheapening of sequencing costs and the implementation of capture methods to enrich samples in endogenous DNA have allowed for the implementation of paleogenomic analyses at a population level. This approach has been used to describe human migrations in the past³ or to understand the evolution of our more beloved domestic species.⁴ As the field keeps moving forward, the paleogenomics field has started to explore the past in more fine-grain detail, reconstructing the history of particular societies and time periods.

A good example of this progression is the paper published by Gnecchi-Ruscone et al.¹ in a recent issue of Cell. In this study, the authors aim to understand the origin of the Avar elites that migrated to the Carpathian Basin in the 6th century. The Avars claimed that they were the successors of the Mongolian Steppe Rouran empire destroyed by the Turks around CE 550, but historical records provide contradictory information regarding the origin of this nomadic group. The presence of Avar people in the Carpathian Basin is attested mainly by burials, whose number is outstanding compared to other contemporary societies.⁵ Some Avar funerary sites, for example, the elite burial at Kunbábony in Kecskemét, are a testimony to the high status of the deceased, with rich grave goods including gold earrings, pendants, and bracelets.

To determine the origin of the Avar people and understand the demographic impact of their migration in the region, Gnecchi-Ruscone et al.¹ analyzed archaeological sites dated to the periods before (4th-5th centuries) and after (7th-8th centuries) the arrival of the Avar people. To better understand possible spatial and social differences, archaeological sites from the Avar period included burial sites from the Avar empire core region and the surrounding areas and also from both elite and non-elite burials.

The pre-Avar period in the Carpathian Basin was characterized by a rapid succession of cultures. Before the 5th century, Romans occupied the western basin and Sarmatians occupied the east. The area was later occupied by the Hunns (5th century) and the Gepids and Logobards (5th-6th centuries). Gnecchi-Ruscone et al.¹ observed that the pre-Avar genetic composition is similar to present-day Central and Eastern Europe, with some Logobard individuals being similar to Southern Europeans. Ancient individuals from the Avar period are genetically diverse, with ancestral components related to both West Eurasia and Northeast Asia. However, the observed heterogeneity can be explained based on certain geographic, temporal, and social differences between the studied burial places.

First, the authors explored individuals from elite burials, characterized by rich grave goods, situated in the Avar empire core region of the Danube-Tisza Interfluve. Elite individuals from the early Avar period showed that 90% of their genetic composition is of Northeast Asian origin. In fact, they are similar to a previously analyzed Rouran sample,⁷ a result that is consistent with the Avar claim of being the successors of the Rouran empire. In the late Avar period, elite individuals from the Danube-Tisza Interfluve still carry a majoritarian Northeast Asian ancestry, but values are lower than in the previous period (70%-80%). The remaining ancestry in Avar elites (approximately 10% in the early period and 20%-30% in the late period) can be traced to the non-local source of Western Eurasian ancestry, most probably coming from the North Caucasus area. This can be explained if Avars migrated in a short period of time from Mongolia to the Caucasus, and later settled in the Carpathian Basin, performing the fastest known long-distance migration in human history. Another interesting result drawn from this study is that the majoritarian Northeast Asian ancestry is maintained for more than a century without signs of inbreeding, which could point to either the migration of a large Avar population with strict marriage practices or to the continuous migration of Avars to the Carpathian Basin.

When Avar-period burial sites from neighboring regions are considered, a higher genetic diversity is observed. The genetic ancestry of these populations forms a west-to-east cline, with individuals having variable local and Avar-elite contributions. Only one individual from an elite burial in this region was consistent





with having more than 50% of Northeast Asian ancestry, while the remaining population had values between 40% and less than 5%, with most of their ancestry having a local origin. This result is interesting as it points to a genetically heterogeneous local elite stratum under the rule of the immigrant Avar elite population. One burial from this region is particularly interesting. This early Avar-period site contained the remains of a male and a female. The genetic composition of the female was consistent with a local origin in the Carpathian Basin. However, the ancestry of the male was approximately 20% Northeast Asian and 80% North Caucasus.

As for most paleogenomic studies, the sampling of only particular burials could produce biased results, and a larger sample size would be desirable for a better understanding of the genetic composition of the Avars. Additionally, as only one Rouran individual is available for comparison, a better knowledge of ancient Northeast Asia would be needed for pinpointing the origin of the Avars. Regardless of these limitations, the analysis performed in the Avar elites is a great example of how paleogenomic analysis can be used to provide detailed information in long standing historical questions.

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DECLARATION OF INTERESTS

The author declares no competing interests.

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