

Jomon ancestry in the Tohoku: initial DNA studies

A recent publication in *kotsu kokogaku to emishi, hayato (Osteological archeology and emishi hayato)*(2012:100-4) traces the DNA of material taken from ancient to modern remains of skeletal material from the Tohoku region (northern Honshu). This is the first time such an analysis has been done that the author is aware of. It puts more teeth into the science that has already been accumulating from the skeletal (mainly cranial) studies done.

Studies done previously on the Hokkaido Jomon (2012:100) is consistent with the Tohoku data, and consistently show the DNA marker for the Jomon is the haplogroup N9b. The percentage for this group in the sample taken from the Jomon of the Tohoku (N=20) is sixty percent. The authors point out that this haplogroup N9b shows up relatively high among this population group.¹

Going forward in time to the Heian through Medieval time periods (2012:103) after the conquest of the Emishi (a group whose core population is still assumed to be mainly Jomon) the haplogroup N9b shrinks to 9.1 percent of the remains studied (N=12). Other markers that are widespread among other East Asian people as a whole such as haplogroup D4 expands to 36.4 percent (from 5 percent during the Jomon period), by far the largest haplogroup during this time reflecting the population studies shown elsewhere of the influx of Yayoi immigrants. It must be pointed out that the number in this sample is fairly small.

The Edo sample (seventeenth century) is an anomaly that does not fit into this gradual shift. Though the sample is from Aomori prefecture (N=30) and represent the northern most part of the Tohoku there are no N9b haplogroup markers at all, and the D4 marker at 43.3 percent is higher than what it is in modern Japan a statistical impossibility. The explanation for this is that the human remains come from one location, Hatakenai, and it looks like this one location had a preponderance of Yayoi Japanese who settled here early before the Edo period.

The modern sample that is much larger (N=336) shows the haplogroup N9b at 2.7 percent. This is pretty sizable when considering the centuries of Yayoi Japanese settlement that took place. The D4 group shows at 36.9 percent in the modern population that is only a few tenths of a percentage above the Heian-Medieval sample.

The last DNA sample comes from the Kofun period, germane to this study, but the sample size at three is far too small to be anything but random. However, interestingly two out of the three individual remains show that they were in the N9b haplogroup. This maybe a random finding but nonetheless show what was seen already in other population studies that Jomon people continued to live side by side with the Yayoi kofun population in the Tohoku.

The limitations of this study is very apparent in the small sample sizes, and regional anomalies such as the sample from the Edo period of Aomori that obviously does not reflect the population of the Tohoku as a whole. There is also a possibility that the N9b haplogroup is larger than that reflected in the Heian-Medieval sample and that the D4 group is smaller. However, due to the small size of the sample this is not reflected in the data. The problem is in finding recoverable DNA material which is difficult at best from remains that are hundreds of years old. The one conclusion with near certainty is that the N9b haplogroup reflects the Jomon population, and that traces of the Jomon can be found even in the modern Japanese population in the Tohoku. However, even though the findings from the Heian-Medieval is suggestive, both that sample and the Edo sample needs more data to be useful. The Edo sample needs to include more remains from other regions of the Tohoku. The Heian-Medieval sample though geographically widespread needs more numbers to verify the population markers. The other issue with the study is the lack of analysis of other DNA markers which were found in the Jomon sample, and in the other samples. Though N9b is dominant among the Jomon there were other markers which seemed to be persistent across the different time periods as well but were not part of the analysis.

¹The study of the Jomon breaks down to 20 individual samples into the following mtDNA: N9b 60%; M7a 30%; D4h2 5%; D4 5%. Time periods from which the samples were taken vary widely covering mostly middle to latter Jomon.

References:

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