

Identification of burned body and complete denture by DNA analysis

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The burned body of an unidentified man was found from the fire site. When it had observed in his mouth, it was edentulous jaw, and the alveolar ridge was featureless. The maxillary and mandibular complete dentures taken out of an unidentified body's mouth by the policeman had a general form, and a personal feature was not found. Then, the difference identification of an unidentified burned body and the complete denture was done by the DNA analysis.

The heart blood and the left subclavian arterial blood were collected from an unidentified burned body, and blood DNA was extracted by using QIAamp DNA Mini Kit (QIAGEN Co.). Denture DNA was extracted from deposit like dental calculus by the phenol/chloroform method. The deposit adhered to the buccal surface in the left upper second premolar and the first molar part of the complete denture. For the DNA typing, 10 loci including subloci were used. In other words, with respect to the autosome STR locus, CSF1PO, TPOX, TH01 and vWA loci [vWA-K (Kimpton et al), vWA-P (Ploos van Amstel et al), vWA-Tsutsumi (positioned between vWA-K and vWA-P) and vWA-K/Tsutsumi (positioned between vWA-K and vWA-N)] were used for DNA type determination. On the other hand, for the Y chromosome STR locus, DYS389I, DYS389II and DYS390 loci were used for type determination. The allele of each locus was determined by confirming the base sequence. The PEP method was partially used in typing the DNA from the deposit like dental calculus. By the way, amelogenin locus was examined for the sex confirmation.

The autosome DNA type of the blood was type 10-11 at the locus CSF1PO, type 8-10 at the locus TPOX, type 6-9 at the locus TH01, type 16-18 at the locus vWA-K, type 19-22 at the locus vWA-P, type 9-11 at the locus vWA-T and type 25-29 at the locus vWA-K/T. Moreover, the DNA type of the deposit like dental calculus coincided with the DNA type of the blood at all loci. The identification ratio with 7 loci including subloci was 0.999999959. On the other hand, the Y chromosome DNA type was type 16 at the locus DYS389, type 27 at the locus DYS389 and type 22 at the locus DYS390 for both the blood specimen and deposit like dental calculus specimen. The DNA type of both blood and the complete denture were examined the male in Amelogenin locus. From the above, since the DNA type (base sequence) of the heart blood, left subclavian arterial blood and the deposit like dental calculus of the complete denture of the unidentified burned body through STR locus of 10 loci including sublocus coincided, it was determined that the complete dentures of the maxilla and mandible were dental prostheses belonging to the unidentified burned body. Even if denture is removed from the oral cavity, if there are no personal characteristics in the form, doubts remain as to the identity of the denture. In order to ensure accuracy, it is believed that undertaking DNA typing is desirable.