

DNA profiling from drown dead bodies

Abstract

A grave offence against the morality is what is known as crime. With the increasing population of our country and decreasing employments have led to the birth of criminals who have such minds which have lost the power of differentiating what is wrong and what is right? These diverted minds lead to the criminal activities like murder, robbery and kidnapping. Usually a lot is seen in common in crimes, the pattern, motive, execution of the crime more or less remains the same. In this paper two such case studies are taken into consideration which showed a similar pattern and motive of crime. In these cases, kidnapping of two individuals were done by them know for ransom money. But intended kidnapping changed to murder. These bodies of murdered individuals were recovered by the native policemen in the decomposed form and the required investigation was carried out. The samples recovered from the bodies were sent to the DNA department of Forensic Science Laboratory, Rohini, Delhi for the DNA analysis. In such cases where the body cannot identify visually the DNA becomes the proof of identity. Different analytical techniques were carried out by the experts in order to confirm the identity of the two decomposed bodies.

Keywords: DNA profile, drown dead bodies, techniques, forensic analysis, decomposed

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Introduction

In this modern era where the technology is taking over the livelihood of people still the problems of unemployment grows on the side. The unemployed brains try to find out the easy means of earning the money; these easy means are not always ethical. Crime is born from the same thought, creating more no matter ethically or unethically and when any act is performed with unethical means it is what is known as crime and the brain behind that is of a criminal.¹ Now a day's one of the easiest ways to earn money is either by robbery or by kidnapping, easy, simple and effective. The case studies studied gave an example of the same. The individuals were kidnapped for ransom and were killed, and kidnappers were known to the victims.² Their bodies were dumped into the nearby riverbeds which were recovered after an interval of time in the decayed condition. When the bodies are kept dumped into a water body they tend to lose the outer covering of the body which makes it difficult for a forensic expert to determine the identity of the individual.³ In such cases DNA extracted from the biological materials can be used for the identification of deceased.⁴ If the body is kept in the decomposed state for a longer period of time it gets challenging for the expert to extract the DNA because it gets fragmented.

Case study

In this paper two case studies were studied; both of these had a common tendency. Two cases of kidnapping were reported one was reported on 3rd September 2018, in Badarpur Delhi. On 3rd of September 2018 approximately at 8 PM, Mahesh (changed name) one caller called police headquarters and reported that his son Sanjay was missing since 2:00 PM. He reported that his son on that day went to deposited Rs 4.5 lacs in State Bank of India and he was accompanied by one of his friends named Sandesh (changed name). The two youngsters went to bank but never returned back. Investigation over

the case began and the investigators came across a decomposed body near a riverbed. The body was kept there for time duration and the identity of the deceased could not be done on the spot. It was estimated the body belonged to Mahesh.

The second case was about an insurance agent where police stated that on 19th of July 2018 they received a phone call from the family of the victim stating the missing complaint of the victim named Robin Kumar (changed name) who was 28 years old and worked as an insurance agent. He was the resident of Rohini, Delhi. During the investigation police found the victim's body in the riverbed near Itawa district. During the course of investigation police found that Robin Kumar went to the house of police officer Sanjay Kumar (changed name) who lived in the police colony flat on the morning of 19th July. Sanjay was Robin's former client and on one occasion he told him that his friend Saurabh who works in UP police wanted to get a life insurance policy worth Rs one crore. They both knew being an agent Rohit usually had a lot of cash kept with him thus they planned to kidnap him and ask for the ransom of 1 crore rupees. On July 19, as per their plan, they called Robin to Sanjay house in the morning. The two tried to overpower him but because of his built and structure, they were not successful. In an attempt to overpower him, they struck a rope in his neck and tried to pull him which eventually led to his death. They then dumped the body in one of the trunks and loaded it in an Innova car. They drove to Hathras and pushed the trunk in the riverbed and returned to Delhi. The body of the victim was recovered in the decomposed condition from the riverbed after couple of days.

Methodology

DNA extraction

The bodies were decomposed, hence, teeth along with blood gauze of the deceased were collected for identification of the deceased. All

the Figures 1–3 are given below. All the samples were collected and sent to the forensic science laboratory by investigation agency for DNA isolation.⁵ The received samples are to be preserved in the lab. Samples (teeth) were broken and pulp of the teeth was taken out into small pieces in 1.5ml tube and forensic buffer was added as per the protocol of automate extraction. Auto mate extraction kit applied in Bio systems is usually used for the isolation of samples.⁶ The DNA was isolated from the sample.

Quantitation

After isolation, all the samples were quantified by using Duo kit of applied biosystems. The Quantifiler Duo DNA Quantification Kit helps the forensic laboratories to simultaneously obtain a quantitative and qualitative assessment of total human and human male DNA in a single, highly sensitive real-time PCR reaction and inhibition in the samples.⁷



Figure 1 Body recovered from the river bed and its condition.



Figure 2 Over all photography of the dead body recovered from riverbed.



Figure 3 Close photograph of dead body showing various types of injuries over the body.

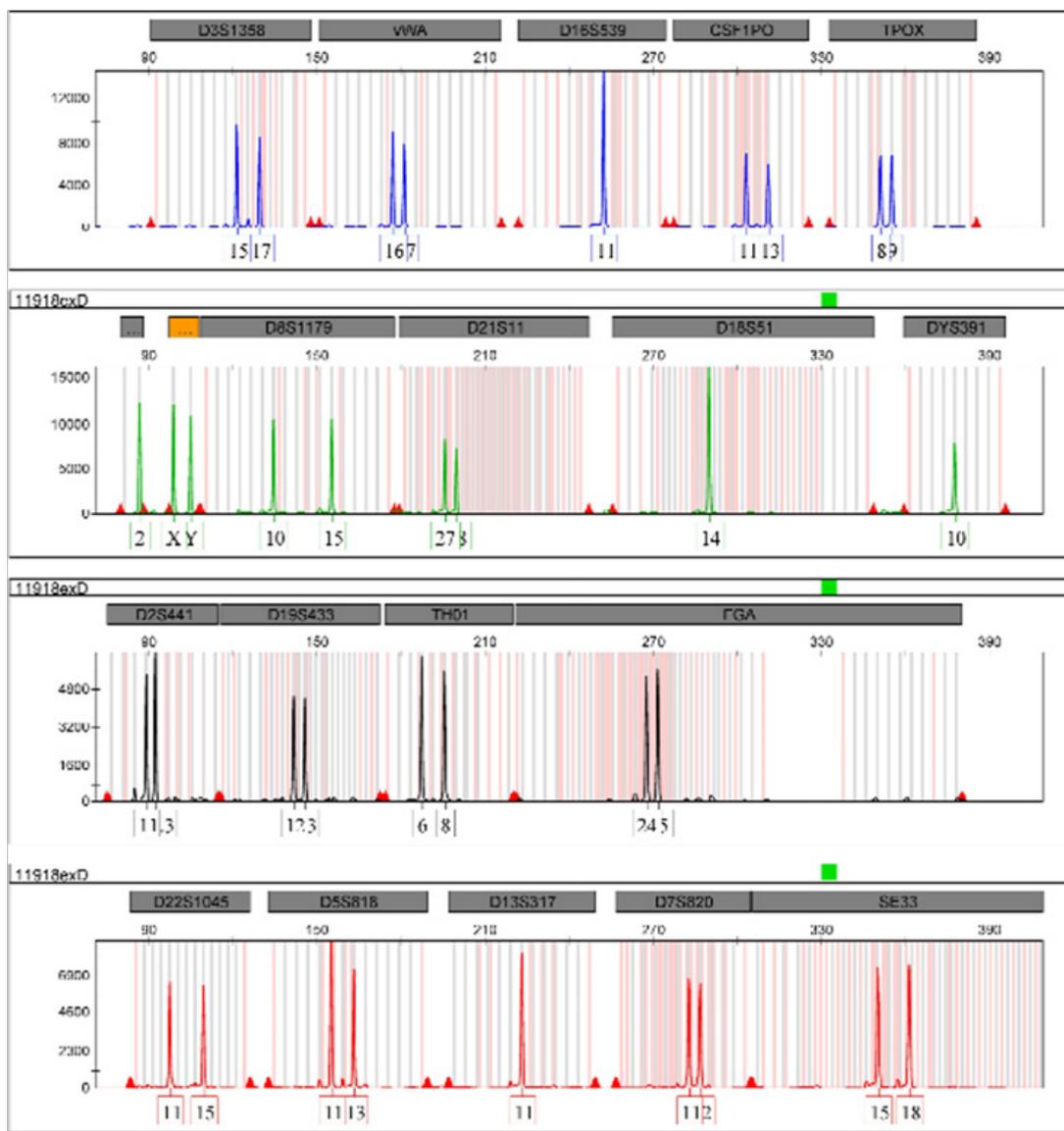
Amplification of DNA

Autosomal STRs were amplified using AmPFI1STR@TM PCR amplification kit (Applied Bio systems) according to kits.

Autosomal STRs were amplified using AmPFI1STR@Identifiler, Globalfiler and Y filer TM PCR amplification kit (Applied Bio systems) according to kits.³ Amplified products were subjected to ABI 3500 XL genetic analyser. The Gene Mapped software was used for STR analysis.

Result & discussion

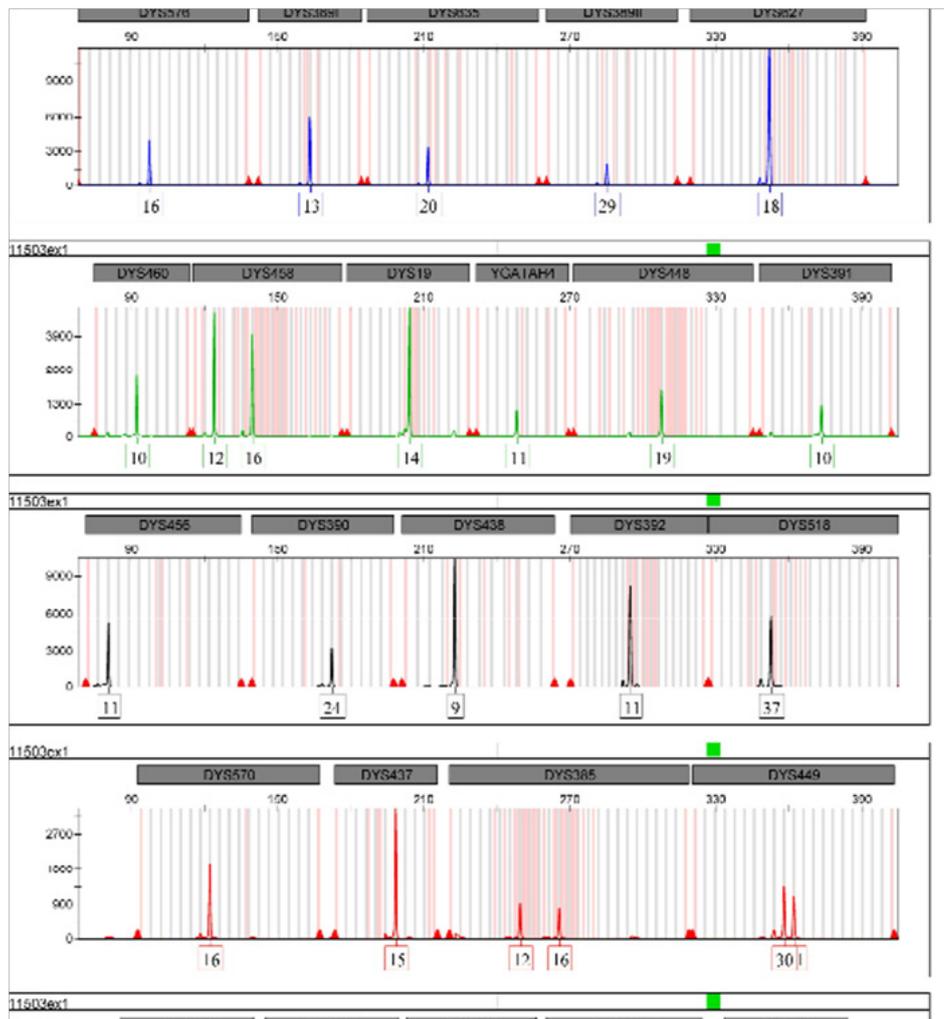
The quantitative analysis of the samples of teeth carried out which showed the quantity of DNA isolated was from 1.22 to 2.45ng/μl, while blood gauze failed to generate the sufficient quantity of DNA. The advancement of quantitative PCR helped a lot especially in cases where the samples are degraded and having inhibition. In degraded samples different STR techniques helped to get accurate profiles.⁸ New approaches have explored techniques for accurate DNA profiling by Identifiler plus™. In addition, the cost of analysis of samples is reduced if is the post mortem process done in due course of time without adopting the procedure done at the earliest. The profile of one of the deceased by using Global filer kit is given below in Graph 1.



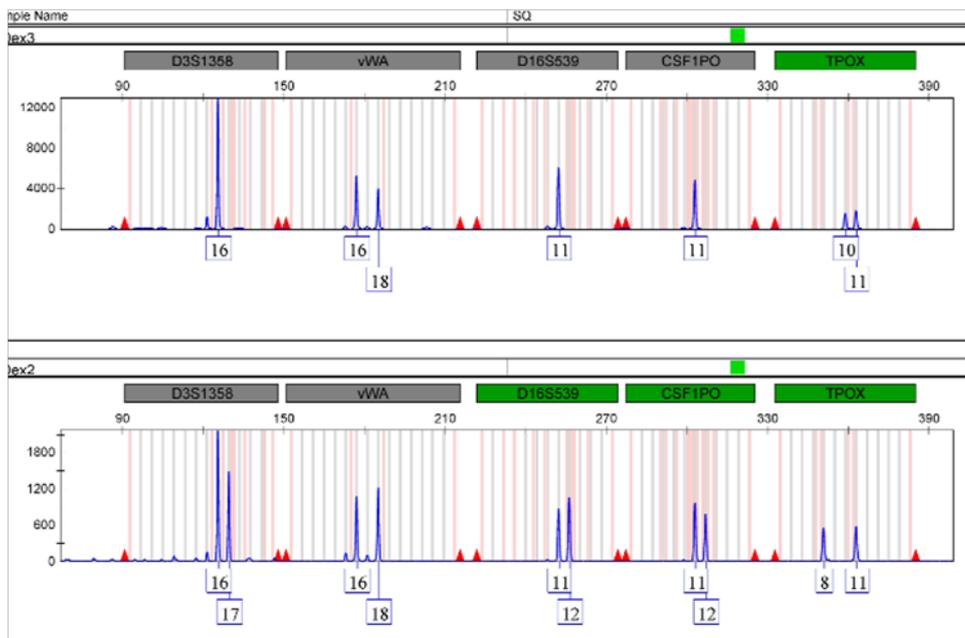
Graph 1 Profile one of the deceased by using Globalfiler kit

To identify both of the deceased, the DNA profile of their parents was prepared. In correspondence to the DNA profile of parents, victim's profile was compared, and identity was confirmed. Profile of Y STR showing the same profile with the father of deceased and given below in Graph 2. In Graph 3 the profile of globalfiler showing the matching of one allele from deceased to father. In similar cases where the investigator found such dead bodies, police officer or autopsy surgeon should preserve hard material i.e. bone or teeth rather than to

collect the soft tissues or blood gauze that is to be collected during the autopsy. Delay after death in such drowning dead bodies can degrade DNA. Moreover, if the expert faces any difficulty to extract DNA from one tooth due to external or internal issues i.e. cavities, disease etc, and the tooth can be replaced by others for DNA profiling. In case of foetus or infant less than 1 year, finger or toe of foot along with the femur bone should be preserved.



Graph 2 Profile of Y STR showing the same profile with the father of deceased.



Graph 3 Profile of global filer showing the matching of one allele from deceased to father.

Conclusion

In case of unidentified dead bodies and decomposed dead bodies, DNA profile is the only source to establish the identity of an individual. The collection of teeth like hard material will help to obtain the DNA profile. Delay in the autopsy of unidentified dead bodies is always a negative issue for the DNA profiling extracted from blood gauze. Since, the temperature tends to degrade the quality of DNA even if it preserved at 0°C temperature. Therefore, blood collected during the autopsy may fail to provide the accurate DNA profile for the establishment of the identity of deceased. Such delay may cause expensive and extra manpower for DNA profiling. It has been concluded that autopsy should be done immediately without any delay and establishment of identity can be performed after post-mortem. Any delay in autopsy cannot be avoided, thereafter, teeth or bone of the victim should be preserved for DNA analysis in place of blood gauze. The teeth are the best sources to identify the deceased based on obtain DNA profiling of deceased.

Acknowledgments

None.

Conflicts of interest

The author declares there is no conflicts of interest.

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