

Minor Girl died not due to wild Animals but, was murdered after Rape Bid in Rural Maharashtra - Proved by incorporation of ABO grouping & DNA Typing

S R Khairkar*, B T Shah, C U Chavan, V V Patil and S V Ghumatkar

Directorate of Forensic Science Laboratories Mumbai,
Maharashtra, India

*Corresponding Author

S.R. Khairkar Directorate of Forensic Science Laboratories Mumbai,
Maharashtra, India (Shyamkhairkar@gmail.com)

Submitted: 2023, Dec 19; Accepted: 2024, Jan 13; Published: 2024, Jan 29

Citation: Khairkar, S. R., Shah. B. T., Chavan. C. U., Patil. V. V., Ghumatkar, S. V. (2024). Minor Girl died not due to wild animals but, was murdered after rape bid in Rural Maharashtra - Proved by incorporation of ABO grouping & DNA Typing. *In J Fore Res.* 5(1), 01-03.

Abstract

Increasing crime rate, in the modern era, has prompted the scientists to update fast and effective forensic blueprint to distinguish between guilty and innocent. In a rape and murder case, confirming the victim's identity is a critical step in the investigation. Additionally, DNA evidence can be pivotal in identifying potential suspects and linking them to the crime. If a suspect's DNA matches the DNA evidence found at the crime scene or on the victim, it can provide strong evidence of their involvement in the crime.

Herein, the incident you described appears to be a tragic and unfortunate event. It seems that there was initially confusion surrounding the cause of the girl's death, with authorities suspecting that she may have been attacked by a wild animal. This suspicion led some individuals to mistakenly admit to her murder, believing that she had already been killed by the animal. In such cases, it is crucial for law enforcement agencies to conduct a thorough investigation to determine the actual cause of death and gather evidence to identify any responsible parties. Autopsies, forensic examinations, and interviews with witnesses and potential suspects are standard procedures in such cases. It's essential to allow the investigative process to take its course to ensure that justice is served and that the facts surrounding the incident are established accurately. Additionally, efforts should be made to prevent similar incidents from occurring in the future, such as enhancing safety measures in forested areas or educating the public about wildlife encounters.

Keywords: DNA profiling, ABO Typing, POCSO Act

1. Introduction

Blood can be used for individual identification, helping to link suspects to a crime or exclude innocent individuals from suspicion. DNA analysis, in particular, is a powerful method for identifying individuals through their blood. The accuracy and reliability of DNA profiling have led to the successful resolution of countless criminal cases. It has been instrumental in exonerating wrongfully convicted individuals and identifying perpetrators who might have otherwise gone undetected. DNA evidence has become a powerful tool in the courtroom, often serving as a definitive link between a suspect and a crime scene [1, 2]. The applications of DNA fingerprinting in forensic science are numerous. Some of the major applications include: Paternity and Maternity Disputes: DNA testing can determine biological relationships between individuals, such as establishing paternity or maternity in legal cases [3].

It's important to note that the successful use of ABO blood grouping and DNA typing in a criminal investigation relies

on the quality of the evidence collected, the accuracy of the analysis, and adherence to proper forensic procedures to ensure the integrity of the results. DNA evidence, in particular, has revolutionized forensic science and played a significant role in solving many criminal cases [4, 5].

Indeed, incidents like the one you mentioned highlight the need for improved safety measures, especially in rural areas. The safety of women and children, particularly in remote or forested regions, is a critical concern. When there is confusion surrounding the cause of a tragic event, it can complicate the investigation and potentially lead to misunderstandings.

To address these issues and enhance women's safety in rural areas, several steps can be taken:

Community Awareness: Educating the local community about potential dangers, wildlife encounters, and safety precautions is essential. This can include awareness campaigns and workshops.

Improved Infrastructure: Developing and maintaining safe infrastructure in rural areas, such as well-lit roads, secure public transportation options, and accessible emergency services, can make a significant difference in ensuring women's safety.

Enhanced Policing: Strengthening law enforcement presence in rural areas and providing specialized training for handling cases involving wildlife or remote areas is crucial. This includes ensuring prompt and accurate investigations.

Community Policing: Encouraging community involvement in safety initiatives can foster a sense of security. Local residents can work with law enforcement to report suspicious activities and ensure a faster response to emergencies.

Victim Support: Establishing support networks for victims and their families, including counseling and legal assistance, can help ease the trauma of such incidents and encourage survivors to come forward.

Wildlife Management: Implementing measures for wildlife conservation and management in areas where human-wildlife conflicts are common can reduce the risk of such incidents.

Policy and Legislation: Advocating for and implementing policies that prioritize the safety of women and children in rural areas is essential. This includes strict enforcement of laws against gender-based violence. Addressing these issues requires collaboration among local authorities, community organizations, and government agencies. It is essential to prioritize the safety and well-being of individuals living in rural and remote areas and to work towards preventing such tragic incidents in the future.

2. Case History

Police probing the incident of an eight-year-old girl, who was found dead in one village in forest area in Khalapur taluka, Dist. - Raigad on after it was suspected that she was attacked by some wild animal. The identity of the body was not immediately confirmed, and the person initially believed that the girl had been killed in an attack by forest animals. This assumption led them to admit to her murder, thinking that she was already dead due to the attack. However, as the investigation progressed, it became evident that the girl's death was not a result of a wild animal attack, and the true circumstances surrounding her demise were eventually uncovered.

It appears that the girl was not killed by wild animals but was instead murdered after a rape attempt in Maharashtra, India. Such incidents are indeed tragic and highlight the importance of a thorough investigation to bring the perpetrator to justice and ensure the safety and well-being of individuals in the community. It's crucial that law enforcement agencies and the judicial system handle such cases with the utmost seriousness and sensitivity.

3. Experimental

3.1. Materials and Methods

The forensic community has selected STR loci to incorporate into multiplex reactions based on several features including 1) Discrete and distinguishable alleles 2) amplification of the locus should be robust 3) a high power of discrimination 4) an absence

of genetic linkage with other loci being analysed 5) low levels of artifact formation during the amplification 6) the ability to be amplified as part of a multiplex PCR. An essential feature of any STR used in forensic analysis is that biological material should give an identical profile regardless of the individual or laboratory that carries out the analysis 4-5. The AmpFISTR Identifiler analyzes 15 STR along with amelogenin locus. This kit is used widely worldwide particularly for kinship testing.

The Amp FISTR Identifiler kit is one of the widely used kits for DNA profiling. It analyzes 15 STR loci, along with the amelogenin locus, which determines the sex of an individual.

It's important to note that advancements in DNA profiling techniques and the use of DNA databases have significantly improved the accuracy and reliability of forensic investigations, leading to the identification of culprits and the exoneration of innocent individuals. DNA fingerprinting has become an invaluable tool in modern forensic science.

- 1) Investigator kit (Qiagen)
- 2) Identifiler kit (Applied Biosystems)
- 3) Lysis buffer
- 4) 1M DTT
- 5) Proteinase K
- 6) PBS buffer

A) DNA extraction of all samples is carried out using EZ1 Advanced (Qiagen) magnetic bead based liquid handling system.

Extracted DNA from the above samples were quantified using Investigator Quantiplex pro kit and then amplified at 15 STR loci by using identifiler PCR amplification kit. Amplified PCR products were genotyped on 3500-XL Genetic analyzer.

3.2. PCR PROTOCOL: STR genotyping was carried out using the AmpFISTR identifiler PCR Amplification kit (Applied Biosystems, Foster City)

AmpFISTR PCR reaction mix: 10.5ul
AmpliTaq Gold DNA polymerase: 0.5ul
AmpFISTR Primer set: 5.5ul
DNA Sample: 10ul

3.3. Genotyping:

STR genotyping is detected and analysed on 3500-XL Genetic Analyzer (Applied Biosystems) instrument by capillary electrophoresis of single stranded amplified DNA fragments.

4. Results of Analysis

The DNA extracted from Tooth, Small cloth piece from crime scene and blood stain cuttings from Half T-shirt was typed at 15 STR LOCI and gender specific Amelogenin locus using PCR Amplification technique.

The results of DNA typing are summarized as follows: ---

5. Interpretation

DNA profiles obtained from Tooth, Small cloth piece and Blood stain cuttings from Half T-shirt of victim are identical and from one and same source of female origin.

6. Discussion

DNA analysis is a highly reliable method for identifying individuals and can be crucial in criminal investigations to establish the identity of victims and potentially link suspects to the crime. Once the victim's identity is confirmed through DNA analysis, law enforcement can proceed with their investigation and take appropriate actions to bring those responsible for the crime to justice. Additionally, this information can provide closure to the victim's family and assist in the legal process.

However, it's important to note that while DNA analysis is a powerful tool, it is not infallible. Proper collection, handling, and analysis of samples are critical to maintaining the integrity of the evidence. Additionally, the interpretation of DNA results requires expertise to avoid misinterpretation or contamination issues. In summary, DNA analysis from the blood at a crime scene is a vital step in any criminal investigation. It not only helps identify the victim and establish a link to the crime but also plays a significant role in identifying suspects, exonerating the innocent, and ensuring justice is served. Its importance in modern forensic science cannot be overstated.

7. Conclusion

Knowing the victim's identity allows law enforcement to gather information about the individual, their background, relationships, and potential motives for the crime. It also enables investigators to track the victim's movements and activities leading up to the incident, aiding in the reconstruction of events. This information is essential for building a comprehensive understanding of the case and identifying potential suspects.

Moreover, DNA analysis can contribute to linking suspects to the crime scene, identifying potential perpetrators, and supporting legal proceedings. It adds a scientific and irrefutable element

to the investigative process, enhancing the credibility of the evidence presented in court.

It's a positive development that the DNA analysis from the blood at the crime scene was able to reveal the victim's identity and confirm her as the victim. This is a crucial step in any criminal investigation as it provides clarity on the victim's identity and helps establish a link between the crime scene and the victim. Overall, the positive outcome of DNA analysis in confirming the victim's identity is a significant stride forward in the investigative process, bringing clarity and focus to the efforts of law enforcement. With the victim's identity confirmed, law enforcement can now proceed with a more focused investigation to determine the circumstances surrounding her death. They can also notify the victim's family and provide them with the necessary support during this difficult time.

References

1. Roewer, L. (2013). DNA fingerprinting in forensics: past, present, future. *Investigative Genetics*, 4 (1), 22.
2. Reynolds, R., Sensabaugh, G., & Blake, E. (1991). Analysis of genetic markers in forensic DNA samples using the polymerase chain reaction. *Analytical chemistry*, 63(1), 2-15.
3. Scientific working Group on DNA Analysis Method (SWGDM) (200) short tandem repeats (STR) interpretation guidelines. *Forensic Science Communication* 2(3).
4. Mahajan, K. D., Pawar, S. G., Harel, V. S., More, K. R. B., & Kulkarni, K. V. HEINOUS CRIME OF RAPE WITH MURDER BY UNKNOWN SOLVED BY DNA FINGERPRINTING.
5. Scientific working Group on DNA Analysis Method (SWGDM) (200) short tandem repeats (STR) interpretation guidelines. *Forensic Science Communication* 2(3).