D32 A Case Study of the Murder Weapon Identification Through the Trace Evidence From Crime Scene Investigation

Choi Yong-Bok, PhD, Chungnam Provincial Police Agency, 301-708, Daejeon, KOREA*

After attending this presentation, attendees will learn important aspects of collecting trace evidence with other circumstantial evidence at the same time.

This presentation will impact the forensic science community by showing the importance of collecting and analyzing trace evidence to quickly determine the cause of death.

Today, many investigators only think that an individual identification is possible through DNA analysis from body secretions such as saliva and sperm, and hair and epithelial cells which are found in a crime scene; they just try to search this to find criminal(s) from the fingerprints on the evidence. If they can't find this evidence, they would focus on searching trace evidence which is used less during investigations.

Trace evidence examination has come from Edmond Locard's (1877~1966) observation in France, 1910; "with contact between two items, there will be an exchange." Therefore, while investigating criminal cases, trace evidence has to be used like other evidence such as fingerprints.

On Oct. 2009, a victim (A, 28-year-old, female) is murdered in the master bedroom and a suspect (B, 41-year-old, male) who killed himself in the bathroom next to the master bedroom the city of Bo-Reong, Chung-nam province. While searching the crime scene, the cause of death of the victim was quickly judged as cervical compression asphyxia. Trace evidence was collected from the victim's neck, the cord which was concluded to have been used during the criminal activity, and the suspect and victim's hands, to make clear what tools the suspect used during the crime. After a postmortem examination, the cause of death is determined as cervical compression asphyxia. While there is a scratch in the epithelial cells on a horizontal line, there was not a specific injury in the cervical muscle. Therefore, it is possible the victim was strangled by ligature, which squeezes the throat using a cord; but it is also possible to squeeze the victim's throat using a hand while at the same time the suspect was squeezing the victim's throat using a cord, as there are a few scratches of tiny epithelial cells on the neck.

In this case study, fabric which was collected from the victim's neck was compared with fabric (trace evidence) collected from the cord used during criminal activity and analyzed to see if they were the same. Analysis found: (1) the fabric of the cord and the fabric collected from suspect's hand and neck were same; (2) the blue fabric of the cord and the blue fabric on victim's neck were the same; (3) the red fabric of the cord and the red fabric on victim's neck were the same; and, (4) the bleaching red fabric to collect the tape on victim's neck and the bleaching red fabric of the tape on the cord were the same. These are the scientific proofs that the crime was committed using the cord.

Today, trace evidence is less used in crime investigation because it is not interesting. In many cases of murder and unnatural death, trace evidence has not been collected and investigators depend on a result of autopsy to determine the cause of death. However, like the example case, the scientific proofs using trace evidence is as important as postmortem examination.

As many crime cases are investigated, the trace evidence has to be collected and it is possible to provide individual identification with a high degree of certainty. If the trace evidence is used with other fragmentary evidence during the investigation, this reasonable method to investigate and solve a crime will be used frequently.

Trace Evidence, Fabric, Autopsy

 ** Presenting Author*