B64 The Missing of the Former Yugoslavia – The Evolving Role of DNA in the Identification Process

Edwin F. Huffine, MS, Rijad Konjhodzic, BS, Jon M. Davoren, MS, Adnan Rizvic, MS, and Daniel Vanek, PhD, International Commission on Missing Persons, Alipashina 45a, Sarajevo, 71000, Bosnia and Herzegovina*

After attending this presentation, attendees will understand the development, incorporation, and impact of a high throughput DNA testing system on the identification efforts in the former Yugoslavia will be detailed.

This presentation will highlight the role of DNA testing in the identification of mass disasters victims and the rapid improvement of such technology.

During the 1990s breakup of the former Yugoslavia during, several hundreds of thousands of people were killed, of which up to 40,000 remained unaccounted for after the end of the armed conflicts. The International Commission on Missing Persons (ICMP) was created at the G-7 conference in Lyon, France in 1996 with the mission of aiding in the identification of these. As the exhumation of mass graves began in 1996, it became apparent that the use of 'classic' forensic identification techniques, i.e., those not utilizing DNA testing, would frequently be unable to establish the identity of recovered bodies. This problem was especially pronounced in identifying the bodies from secondary mass graves and by 1999, thousands of bodies had been recovered that could not be identified.

The loss of life in Slovenia required only minimal DNA testing. In Croatia, thousands of individuals lost their lives and a system was developed in which DNA testing is an option for those cases in which classic forensic techniques prove insufficient for identification. However, it was for the tens of thousands of missing in Bosnia and Herzegovina for which the evolution of the DNA process had has the greatest impact in terms of the number of individuals identified. Initially, no cases from Bosnia and Herzegovina were DNA tested and the identification process was based wholly upon classic methods. Since virtually no medical records existed in Bosnia and Herzegovina, the accuracy of such identifications was a source of debate. Beginning in 1998, samples from a few presumptive cases were sent out of country for DNA testing. The results obtained were used to either confirm or refute the presumption of identity, and it was not uncommon for more than a year to pass before DNA results were returned. The application of DNA on such a small scale had only a minimal impact, but it did demonstrate that DNA testing had the potential of giving answers to the families of the missing.

In order to help address the identification process of thousands of missing, the ICMP developed a state-of-art DNA testing system within the former Yugoslavia, consisting of four DNA laboratories located in Sarajevo, Tuzla, Banja Luka and Belgrade. These four DNA laboratories must work together as a system in order to bring answers to the families of the missing. All data obtained from these four DNA laboratories is submitted to the central computer system in Tuzla, Bosnia and Herzegovina. Additionally, eight blood collection centers were established and a comprehensive, centralized computer system was created in which all data relating to the missing is stored. All blood and bone samples collected in Bosnia and Herzegovina as well as the Serbia, including Kosovo, are submitted to ICMP's central Identification Coordination Center (ICC) located in Tuzla, Bosnia and Herzegovina. (It was in early 2002 when large number of bone samples began to be submitted to the ICMP from Kosovo and later that year when bone samples were sent to the ICMP from Serbia proper.) All samples are bar coded at the ICC and then distributed throughout the ICMP DNA laboratory system according to the type of sample and DNA testing required. Once a DNA report has been generated, it is given to the pathologist in charge of the case, who is usually the person who submitted the bone sample. It is the legal responsibility of this pathologist to contact the family and officially close the case.

By the summer of 2003 this system was generating between 300 – 400 DNA reports per month. Once a DNA match report has been returned to the pathologist, he/she will review ante mortem records, articles of clothing and personal effects, and the body to ensure consistency between these 'classic' forms of evidence and the alleged identity of the individual as developed by DNA testing. The magnitude and success of this DNA testing system has altered the role of DNA testing in the former Yugoslavia where DNA testing is now frequently used to produce the initial lead with other identification methods assuming the confirmation role. As a result, names are being returned to thousands of missing.

Human Identification, ICMP, DNA

 ** Presenting Author*