DETECTION AND SIGNIFICANCE OF BLOOD IN FIREARMS USED IN CONTACT GUNSHOT WOUNDS

By

Jo-Mari Visser
Student NR: 2210142
MSc Medical Criminalistics
Department of Forensic Medicine
University of Pretoria
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DISSERTATION

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Student NR: 2210142

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Supervisor: Prof. G. Saayman
Department of Forensic Medicine
University of Pretoria

Co-supervisor: Senior Superintendent Leonie Ras
Forensic Science Laboratory
South African Police Service

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MAGISTER SCIENTIAE in Medical Criminalistics.
DECLARATION

I hereby declare that this dissertation is my own work. It is being submitted for the degree Magister Scientiae in Medical Criminalistics at the Department of Forensic Medicine at the University of Pretoria.

It has not been submitted before for any degree or examination at this or any other university.

Opinions or statements expressed in this dissertation do not necessarily reflect that of the University of Pretoria, the supervisor or co-supervisor of the dissertation, or that of the external examiners.

Jo-Mari Visser

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ABSTRACT

Firearm fatalities in South Africa are responsible for a very large number of fatalities. For purposes of judicial administration, determination of manner of death, in particular, differentiating between homicidal, accidental and suicidal death, is one of the primary objectives in fatal shooting investigations.

Determining the muzzle-target distance can assist in establishing the manner of death, since contact gunshot wounds are seldom seen in cases of homicidal or accidental death. It has been reported that muzzle-target distance can be confirmed by detection of blood back spatter on the inner and outer surfaces of the weapons.

To determine whether this phenomenon was being used to assist the forensiometric analysis of fatalities, a study was undertaken whereby weapons used to inflict fatal contact gunshot wounds in victims presenting at the Pretoria M.L.L., were requested for biological analysis during the period June 2002 to June 2003. Of the 123 cases identified, only 30 firearms were delivered to the FSL for analysis. Blood was found on the inside of barrels in 70% of cases, and the outer surface in 40%. These figures do not correlate well with international studies.

The very low retrieval rate of weapons for analysis precludes the use of an important forensiometric tool in medico-legal investigation of firearm related fatalities in Pretoria. The urgent need to develop adequate protocols with respect to police handling of weapons is hereby confirmed.
Skietwond sterftes in Suid Afrika is verantwoordelik vir 'n groot hoeveelheid van alle sterftes. Vir geregtelike administrasie, is bepaling van oorsaak van dood, en in besonder differensiasie tussen moord-, ongeluk- en selfmoord sterftes, een van die primêre doeleindes in noodlottige skietgeval ondersoek.

Bepaling van die loop-teiken afstand kan die bepaling van die oorsaak van dood fasiliteer, aangesien kontak skietwonde seIde in moord- of ongeluksterftes teëgekom word. Dit is aangeteken dat loop-teiken afstand bevestig kan word deur die opsporing van bloed spatsels aan die binne- en buitekantste oppervlakke van die vuurwapens.

Om te bepaal of hierdie verskynsel gebruik is om die forensiometriese analise van sterftes te assisteer, is 'n studie onderneem waarvolgens wapens, gebruik in die toediening van noodlottige kontak skietwonde in slagoffers wat presenteer by die Pretoria RGL, aangevra is vir biologiese analise tydens die periode Junie 2002 tot Junie 2003. Van die 123 sake ge(identifiseer, was slegs 30 vuurwapens na die FWL geneem vir analise. Bloed was sigbaar aan die binnekant van wapens in 64%, en aan die buitekantste oppervlak in 40% van alle sake. Hierdie syfers korreleer nie goed met internationale studies nie.

Die baie lae opsporingsyfer van vuurwapens vir analise sluit die gebruik van 'n belangrike forensiometriese instrument in regsgeneeskundige ondersoeke van vuurwapen-verwante sterftes in Pretoria, uit. The dringende noodsaaklikheid vir geskikte protokol met betrekking tot polisie hantering van wapens is hierdeur bevestig.
ABBREVIATIONS

FSL: Forensic Science Laboratory
FWL: Forensiese Wetenskap Laboratorium

MLL: Medico-legal Laboratory
RGL: Regsgeneeskudige Laboratorium

CRC: Criminal Record Centre

SAPS: South African Police Service

SAP13: Abbreviation employed to describe the register at police stations where all items of physical evidence (for example, firearms) are registered and stored.

GSR: Gunshot residue

IBIS: Integrated Ballistics Identification System

AFIS: Automated Fingerprint Identification System
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