

Sharps discarded in inner city parks and playgrounds – risk of bloodborne virus exposure

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Summary: The objectives of this study were to determine the number of discarded syringes found in four parks in Southwark, South London, over a specific time period and to test their contents for the presence of hepatitis B virus (HBV) and hepatitis C virus (HCV). Of 106 syringes collected over a four-month period, evidence of HBV was detected in 4.7% (5/106) and HCV in 4.7% (5/106). Urban children, park users and workers are at risk of contact with sharps which may be contaminated with both viruses. Park users need more information on what to do in the event of an injury, and park workers should be immunised against HBV and educated on safe disposal of sharps.

Key words:
bloodborne virus exposure
discarded sharps
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Introduction

Needles and syringes discarded by injecting drug users are a common hazard in inner city parks and playgrounds. Urban children (many of whom lack alternative outdoor play areas), other park users, park workers, and animals are at risk of injury and infection. Studies have shown a high incidence of hepatitis B virus (HBV) and hepatitis C virus (HCV) in equipment tested after use at injecting centres¹. Others have shown high infection rates in prisoners injecting illicit drugs².

The authors having been involved in the assessment and follow-up of individuals with needlestick injuries sustained in local parks, set up this study to determine the risk of bloodborne virus exposure and carry out HBV and HCV testing on discarded syringes found in four parks in Southwark, South London.

Methods

In Southwark, South London, park rangers normally collect and dispose of discarded sharps and syringes found in the parks. To minimise injury during collection,

rangers were educated about the risks and given protective gloves, plastic containers for the syringes and metal boxes for storage and delivery. They were offered hepatitis B immunisation.

Over a four-month period from 12 April to 30 July 2001, one of the park rangers brought all the syringes found in the parks to the local virology laboratory two or three times a week. Single needles were not collected. The syringes were stored in the laboratory at -70°C. The syringes were flushed with 0.5 mls of phosphate buffered saline (PBS), HCV RNA was extracted using the QIAamp viral RNA Mini Kit (QIAGEN GmbH, Germany), and aliquots were tested for hepatitis B surface antigen (HBsAg) (Abbott Murex, IL, USA) and HCV RNA (AMPLICOR, Hepatitis C Virus (HCV) Test, version 2.0, Roche Diagnostics Corporation, IN, USA). A pilot study had been carried out in which four clinical samples containing HCV RNA, neutralisable HBsAg and the relevant kit positive controls were diluted in PBS. Detection was confirmed in each case up to a dilution of 10⁻³.

Results

A total of 106 discarded syringes were found and collected from four parks and playgrounds in North Southwark. Washings from all the syringes were tested. HCV RNA was detected in five (4.7%) samples and HBsAg in a further five samples (4.7%). Six samples gave indeterminate results for HCV RNA, the amplification internal control being negative in three of these samples indicating the presence of assay inhibitors. A further three samples contained non-neutralisable HBsAg. Hence, overall, 9.4% of syringe washings were proved to contain either HCV RNA or HBsAg. There was insufficient sample remaining for human immunodeficiency virus (HIV) testing.

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Discussion

The results show that inner city children, and other park users and workers, are at risk of contact with sharps which could be contaminated with hepatitis B and C and potentially other bloodborne viruses. Although 9.4% of syringe washings contained either HCV RNA or HBsAg, the actual prevalence is likely to have been higher as syringe washings and blood-stained fluid of unknown origin was tested rather than blood samples. In addition, nine samples gave indeterminate results. The infectivity risk is difficult to assess as no conclusions can be drawn about virus viability from the detection either of viral genome or antigen. However, HBV and possibly HCV and HIV can survive in the environment for several weeks. Factors affecting virus survival include the viral genome or antigen load, ambient temperature, sunlight and humidity, and volume of body fluid present³. Although the risk of virus transmission from discarded syringes may be low, the risk is still present.

In terms of potential bloodborne virus exposure incidents, studies in Dublin⁴ and Edinburgh⁵ reported 52 and 70 needlestick injuries in children over 14 and 60 month periods respectively. Another report looked retrospectively at the reasons for giving hepatitis B immune globulin as prophylaxis against HBV after accidental exposure. Of the request forms returned between 1988 and 1991, 51% (1,805) of the 3,535 accidental exposures occurred in the community. Of the needle-stick injuries, 16% (289) occurred in the street, 12% (217) from contact with rubbish, 6% (108) in the park and 4% (72) on the beach⁶. One concern is that some injuries will be reported late or not at all, compromising early management of the recipient. Moreover, if the recipient was infected with one of the bloodborne viruses, horizontal transmission in families and child-to-child transmission in schools and day-care centres could occur⁷.

Local authorities should ensure that the workforce is staffed appropriately, educated about the risks of sharps injuries and use of protective equipment, and has a

bloodborne virus exposure policy to work to. In addition, the public should be warned about the risk and what they should do on finding sharps in public places. Contacting the park rangers for appropriate collection and disposal would be helpful in the parks. Unfortunately, placing sharps bins in public places is unlikely to be a solution as they may attract both drug users and children.

Finally, treatment programmes for injecting drug users should include education about the dangers of bloodborne infection and safe disposal of needles.

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