Post-traumatic stress in former Ugandan child soldiers
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Worldwide, 300 000 children are currently used as child soldiers in armed conflicts. We interviewed 301 former child soldiers who had been abducted by the northern Ugandan rebellion movement Lord’s Resistance Army. All the children were abducted at a young age (mean 12·9 years) and for a long time (mean 744 days). Almost all the children experienced several traumatic events (mean six events); 233 (77%) saw someone being killed, and 118 (39%) had to kill someone themselves. 73 children also filled in the impact of event scale—revised to assess their post-trauma stress reactions. 69 (97%) reported post-trauma stress reactions of clinical importance. The death of a parent, especially of the mother, led to an important increase in score for avoidance symptoms (mother alive 16·4, mother not alive 21·6; p=0·04), with a high increase for girls (from 15·1 to 25·8), but almost no change for boys (from 17·7 to 17·4; p=0·02). Our findings shed light on the nature of severe trauma experienced by this group of children, and show a high rate of post-traumatic stress reactions.

Lancet 2004; 363: 861–63

The increasingly widespread exploitation of children as soldiers is one of the most vicious characteristics of recent armed conflict. About 300 000 children younger than 18 years are currently serving as soldiers, guerrilla fighters, or in support roles in more than 50 countries around the world.1

This report focuses on former child soldiers of the northern Ugandan Lord’s Resistance Army (LRA). We aimed to look into the nature of trauma experienced by the children during their abduction. Since little scientific research exists with regard to post-traumatic stress disorder (PTSD) in former child soldiers, we also investigate their post-traumatic stress symptoms, with a limited investigation of possible associations between demographic characteristics, experiences during abduction, and post-traumatic stress.

The 16-year-old civil conflict in northern Uganda is an extremely cruel example of using children as soldiers. From the beginning, Joseph Kony’s rebellion movement, the LRA, committed serious human-rights abuses against the inhabitants of northern Uganda. Tens of thousands of people have been killed and mutilated, hundreds of thousands displaced, and farming activities and livestock have been totally disrupted. The abduction of children is the main method of recruitment of the LRA and about 90% of recruits are children. An estimated 20 000 children have been abducted; about 8400 of them between June, 2002, and June, 2003.

Since the security situation in northern Uganda has deteriorated substantially since June, 2002, and travelling was almost impossible, the research had to be restricted to former child soldiers living near or in Gulu and Lira town. By an announcement on the radio, the 473 former child soldiers involved in the programme of the organisation Sponsoring Children Uganda were asked to come to the child soldiers’ rehabilitation centre, World Vision, in Gulu and to the offices of the Concerned Parents Association in Gulu and Lira. With a semi-structured questionnaire, we interviewed 301 children, all older than 12 years, to obtain basic demographic information and specific knowledge about their experiences during abduction. When necessary, an interpreter was available during the interview.

From the 301 participants, we randomly selected a sample of 75 children, who were asked to complete the impact of event scale-revised (IES-R); 71 children agreed to participate. The IES-R is a self-report scale, parallel to the DSM-IV criteria for PTSD, with a maximum total score of 88; a score of greater than 24 is judged to show clinically significant symptoms.2 The scale includes three subscales: intrusion (seven items, maximum score 28), avoidance (eight items, 32) and hyperarousal (seven items, 28).3 The IES-R was translated into Luo and back into English later. Oral consent from the participants was obtained and a psychologist was available to provide support, if necessary.

Descriptive statistics were used to present the characteristics of the whole group, the group who completed the IES-R, and the group who did not. Differences between the last two groups were analysed with χ² and Kolmogorov-Smirnov Z tests. Multivariate analysis of variance was used to investigate the association between demographic characteristics, experiences during abduction (sex, mother alive, father alive, and “killed someone”), and the three subscales of the IES-R.

Most children had been abducted at a very young age (mean 12·9 years) and for a mean period of more than 2 years (table 1). Violence was not limited to children: their parents had also been victim of abductions and killings, and 30 (10%) of the interviewed children were orphans. No significant differences in demographic and social variables were found between the children who completed the IES-R and those who did not.

The interviews with the children gave insight into the nature of the experiences they had during their abduction (table 2, panel). On average, children had been exposed to six different traumatic events (median six; range 0–13). 233 children (77%) saw someone being killed during their abduction; 18 (6%) saw their own father, mother, brother, or sister being killed. 118 children (39%) had to kill another person themselves; 7 (2%) killed their own father, brother, or another relative. 184 of the children (61%) lived in Sudan under very difficult conditions; 49 of them (27%) had to drink their own urine. 193 children (64%) were forced to participate in fights, 21 of them (7%) without any military training.
Results from the IES-R showed very high rates of post-traumatic stress symptoms: 69 (97%) of the 71 children had a clinically significant score. The mean scores on the three subscales were: intrusion 18·2 (median 19; SD 5·8; range 3–28), avoidance 17·8 (18; 6·1; 3–29), and hyperarousal 17·5 (18; 5·6; 4–27); the mean total IES-R score was 53·5 (55; 13·2; 18–81).

The death of the mother led to higher mean avoidance scores (mother alive 16·4, not alive 21·6; p=0·04), and the effect differed between boys and girls (p=0·02); avoidance scores (mother alive 16·4, not alive 21·6; p=0·04), and the effect differed between boys and girls (p=0·02); avoidance scores (mother alive 16·4, not alive 21·6; p=0·04), and the effect differed between boys and girls (p=0·02). The death of the mother led to higher mean avoidance scores (mother alive 16·4, not alive 21·6; p=0·04), and the effect differed between boys and girls (p=0·02).

We investigated the experiences and post-traumatic stress reactions of former child soldiers during a conflict. Nearly all the children experienced several severe traumas. Moreover, the post-traumatic stress reactions of these children were severe and widespread: nearly all fell within the clinical range of the IES-R. The current uprising of fighting in northern Uganda might have affected this high proportion of PTSD.

Our findings show that the availability of a parent, and certainly of the mother, could be a protective factor against stress reactions in adverse situations happening to children. Although there was no significant difference between girls and boys in PTSD, there are indications that the death of the mother has more negative consequences for girls than for boys. This finding emphasises the supportive role a parent can play in the recovery of the child.

The age of the child, the period of abduction, and the period between escape and research did not affect PTSD. Even children who escaped quite a long time ago still suffered from post-traumatic stress. Research with children who experienced traumatic events lends support to the finding that post-traumatic stress reactions in children can last for several years.

The number of traumatic experiences and the kind of the trauma experienced seemed to have little effect on the post-trauma reactions. This finding could be ascribed to the fact that the circumstances in which these children had to survive were traumatising in themselves, and it is difficult to distinguish the effect of different types of trauma on post-traumatic stress reactions in children who did not spend time in Sudan reported this experience. In addition to separation from a parent, the kinds of traumatic events that children had to endure were severe and widespread: nearly all fell within the clinical range of the IES-R. The current uprising of fighting in northern Uganda might have affected this high proportion of PTSD.

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HIV-1 specific CD8+ T cells with an effector phenotype and control of viral replication

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Most people infected with HIV-1 cannot control viral replication despite the presence of virus-specific CD8+ T cells. It has been postulated that this inability is related to the failure of these cells to mature into fully differentiated effector cells. We tested this hypothesis by comparing the maturation phenotype of virus-specific CD8+ T cells in people who could control viral replication off anti-retroviral therapy with those who could not. In five patients with treated acute HIV-1-infection, structured treatment interruption (STI) induced control of viral replication was associated with expansion of virus-specific CD8+ T cells with a fully differentiated effector phenotype. These effector cells were also expanded in treatment-naïve chronically infected individuals who spontaneously controlled viral replication, and augmented expression of perforin was noted in both settings. Our data show that full maturation of virus-specific CD8+ T cells is possible in the context of HIV-1-infection, and suggest that such maturation might be important in viral control.

See Commentary

Individuals with chronic progressive HIV-1-infection have dysfunctional CD8+ T cells,1 a finding ascribed to impaired maturation of virus-specific cells. The differentiation state of CD8+ T cells has been correlated with their effector function,2,3 and skewed maturation could underlie the inability of these cells to control viral replication in chronically infected patients (figure).2 People with treated acute HIV-1-infection undergoing structured treatment interruption (STI) can often be induced to control viral replication, at least transiently.1 We compared the maturation phenotype of immunodominant HIV-1-specific CD8+ T cell responses in acute-STI (AS) patients before, during, and after sequential STIs, for up to 4–3 years, with those seen in HIV-1-infected patients not treated during acute infection.

The study was approved by the institutional review board, and written informed consent was obtained from all participants. The HIV-1–specific CD8+ T cell repertoire of all participants was determined by detailed Elispot analyses.4 CD45RA and CCR7 were used as markers of lineage differentiation and HLA class I tetramers were used to identify antigen-specific CD8+ T cells (figure).2,5 Acute infection was defined by the presence of HIV-1–RNA in plasma, and negative or weakly positive antibody tests. STI criteria in acutely treated persons included plasma viral-load below values of quantification (<50 RNA copies/mL plasma) for at least 8 months and an HIV-1–specific CD4+ T cell stimulation index of >10. Immune control was defined as viral load <5000 RNA copies/mL plasma, and treatment was restarted with viral load >5000 RNA copies/mL for 3 consecutive weeks, or 50 000 RNA copies/mL at one time.

Study visits were predetermined, and timed to assure adequate monitoring of viral-load dynamics. Patient AS1 achieved prolonged immune control (defined as >100 days) during the third STI (>800 days), patients AS2 and AS3 during the second STI (>1000 days and 200 days, respectively). AS4 controlled HIV-1 replication during the...