Abducted by the illness: A qualitative study of traumatic stress in individuals with acute leukemia

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Abstract

Symptoms of traumatic stress are common in acute leukemia. The goal of the present qualitative study was to understand this traumatic stress, as perceived by patients. Participants were 43 patients with acute leukemia in Toronto, Canada. Participants were asked in serial interviews about their experience of diagnosis and treatment. A total of 65 interviews were analyzed utilizing the grounded theory method. Our findings provide insight into the traumatic experience of the diagnosis and treatment, as well as the initial psychological response to this trauma. Patients coped by surrendering control to the medical team, in whom they felt great trust. Patients also expressed a strong preference for limited information, with a preference to avoid discussions about overall prognosis. These results may inform interventions to relieve traumatic stress in this high risk population.

Keywords

Acute leukemia; Grounded theory study; Traumatic stress

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Conflict of interest

The authors declare that there is no conflict of interest in preparing this article.

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1. Introduction

Acute leukemia, a condition associated with considerable morbidity and mortality, is characterized by a sudden onset and a dramatic course, with a median survival of 6 weeks without treatment. Individuals affected require immediate hospitalization in order to initiate intensive induction chemotherapy. This initial treatment typically lasts at least 3 weeks and is usually associated with toxic effects including severe stomatitis, nausea, and bone marrow depression, with life-threatening pancytopenia-related symptoms such as bleeding, or sepsis.

Previous quantitative, questionnaire-based reports have highlighted the significant subjective distress associated with the diagnosis of acute leukemia and its initial treatment [1–3]. To further elucidate this experience, we are currently conducting a longitudinal mixed-method study to evaluate the pattern of physical and psychosocial distress in patients with acute hematologic malignancies throughout the treatment trajectory [4,5]. Analysis of the baseline quantitative data of 205 patients demonstrated that clinically significant symptoms of traumatic stress are common in acute leukemia, with 14% of 205 patients meeting DSM-IV-TR criteria for acute stress disorder, and an additional 18% meeting criteria for subsyndromal acute stress disorder [4].

Quantitative research on traumatic stress in this population allows questions to be answered regarding the frequency and correlates of this phenomenon. However, qualitative, interview-based studies may deepen our understanding of this experience by illuminating the meanings individuals attach to the experience of traumatic stress. In a previous qualitative study of 10 patients with leukemia or lymphoma, Xuereb and Dunlop documented the overwhelming sense of threat at the time of diagnosis [6]. Similarly, Koenigsmann [7] described in a sample of 12 patients with acute leukemia the shocking experience of diagnosis. Additional qualitative research is needed to more fully understand the patients' perspective and to inform interventions to prevent or alleviate distress [8].

In the present paper, we present a grounded theory analysis of qualitative data obtained from interviews with participants in a longitudinal study. This qualitative study was conducted to enhance our understanding of the traumatic experience of acute leukemia and its treatment, and of the factors that patients perceive to diminish or enhance distress at different points of their illness trajectory. This information will inform therapeutic interventions to prevent and relieve distress in this high risk population.

2. Methods

2.1. Recruitment

This study was approved by the Research Ethics Board of the University Health Network; all participants provided informed, written consent. Participants were recruited from January 2008 to December 2011, from a larger pool of patients participating in a longitudinal, quantitative study of physical and psychological distress in patients with acute myeloid leukemia (AML) or acute lymphocytic leukemia (ALL) [4,5].

Potential participants for the quantitative study [4] were approached on an inpatient hematology ward or in a hematology outpatient clinic within one month of admission for treatment at the Princess Margaret cancer centre, University Health network. All participants were at least 18 years old, spoke and read English sufficiently to provide informed consent and complete questionnaires, and had no significant cognitive impairment, as demonstrated by a score of 20 or more on the Short Orientation-Memory-Concentration (SOMC) [9] test, administered by research staff at the time of recruitment. After providing informed consent, patients completed serial questionnaire packages for up to 18 months of follow-up. Medical and demographic data were obtained from the patients at the time of recruitment and extracted from their medical records.

Baseline data from the quantitative study were used to select a subset of participants for the present qualitative study. A quota sampling method [10] was used for this purpose to ensure that there were roughly equal numbers of older and younger men and women, and of interviewees with high and low scores on measures of psychological distress, including the Stanford Acute Stress Reaction Questionnaire [11], Beck Depression Inventory-II [12], and the CARES Medical Interaction subscale [13].

2.2. Interviews

Interviews were conducted by trained interviewers (members of the research team) at the convenience of the participants on the leukemia ward, in the clinic, or by telephone, if no other arrangement could be made. The interviews lasted up to 60 min, depending upon the participant's physical status and ability to engage in the interview. The interview protocol was semi-structured and discovery-oriented. The goal of the interviews, as explained to participants, was to understand the experience of living with acute leukemia and to complement the information gathered from the questionnaires of the larger study. Interviews began with an open-ended enquiry about the experience and understanding of the illness; probes then followed about illness-related stress, specific stressful experiences, the experience of treatment from diagnosis to current stage, support needs, sources of support, coping strategies and relationships with significant others. The interview also included probes on participants' experience of their relationships and interactions with their health care providers, and how they have changed throughout the illness and treatment trajectory. Follow-up interviews maintained a discovery-oriented protocol but also re-visited any themes that were discussed in previous interviews.

2.3. Analysis

Interviews were audio-recorded and professionally transcribed verbatim, and the data was managed with the qualitative software program Nvivo9. Meanings contained in transcripts were conceptualized into categories. The applicability of any given category to the text as a whole was checked through an inductive analysis of subsequent and preceding text in the same transcript, as well as in other transcripts [14,15]. This recursive process proceeded until theoretical saturation was reached, demonstrated by a category model that encompassed the variations of experiences [16].

3. Results

3.1. Sample

Eighty-one patients were invited to participate in a series of interviews. Of those, 45 agreed to participate, but data obtained from 2 patients was not included in this analysis due to faulty interview recording. The participants ranged in age from 21 to 71 years, with a median age of 47, and 18 (42%) were female (see Table 1 for additional characteristics of the sample). At the point of analysis, 24 participants were interviewed once, 16 twice, and 3 three times, leading to a total of 65 interviews.

3.2. Findings

Our data collection included patients' narratives describing their experience throughout the treatment trajectory of acute leukemia from the time of diagnosis to the time of the interview. We focus in this paper on the analysis of the patients' narratives about the initial stage of diagnosis and hospitalization for induction chemotherapy (an analysis of narratives about later stages will be described in a subsequent paper). All participants underwent induction chemotherapy immediately following diagnosis, and all were asked in the study interviews to reflect about their current ($n = 6$) or previous ($n = 37$) experience of diagnosis and inpatient induction treatment. The mean time from the initiation of induction chemotherapy to the point of the first interview was 3 months (with a range of 17 days to 8 months). We did not identify any systematic differences in qualitative themes based on the timing of the interview in relation to diagnosis and induction therapy, or on other demographic or medical factors (e.g., gender, age, or disease type).

Our findings capture the experience of diagnosis, hospitalization and immediate treatment with two inter-related categories: the first describes the initial traumatic experience of diagnosis and hospitalization, and the second delineates the process of psychological response to the inpatient induction treatment.

3.3. The initial trauma: "Abducted" by the illness

Participants described the diagnosis of acute leukemia as dramatic and shocking, a "whirlwind" or "like getting hit by a truck that you didn't see coming." The diagnosis often occurred without any major prodromal symptoms, so patients had not suspected that they were ill. Thus, "out of the blue," they learned that their lifespan had been potentially reduced to as little as several weeks, and that immediate treatment was required to save their lives. As one participant remarked: "I went from seemingly healthy and feeling pretty good about everything in my life, into induction in twelve hours."

The diagnosis was often delivered in an emergency department setting to which participants were directed by their family doctor following an alarming blood test. It was typically delivered by a physician whom they had just met, and often in a manner that participants experienced as rushed and unsupportive, amplifying their sense of shock and devastation:

"When I first found out, I found out at my local hospital. My doctor had taken blood work and seen that there was a problem. He sent me to emergency. When the doctor in emergency came in, they did blood work again when I got there. When he

came in, he just walked into the room and said, ‘Well, it looks like you’ve got leukemia. That’s a cancer of the blood.’ He said, ‘I’m going off shift now. The next doctor coming in will tell you what you need to do next.’ Then he walked out of the room. It was that blunt. My family was all there. We were all just shell-shocked because there was no preparation. There was no, ‘I’d like to talk to you alone.’ There was no preamble at all. It was pretty rough.” (Participant #5235)

The urgency with which intensive treatment was required was experienced by participants as another shock. As one participant noted, “there was no waiting and getting used to it and trying to settle into it.” Within days or even hours after being diagnosed, participants were hospitalized to begin a month-long intensive treatment, with “no time to think,” “digest” or “prepare”:

“You’re kind of in shock. I mean I went into the emergency unit, they were trying to find out what was wrong with me. I didn’t pack a bag or anything like that. And I wound up staying there overnight, and being shipped to this hospital. Didn’t see my apartment for months. I had no idea I wasn’t even going to see my apartment for months. Like, they just picked me up and took me, took my life away.” (Participant #5014)

The diagnosis and immediate initiation of treatment involved a sudden removal of patients from all aspects of their normal life. The inpatient induction chemotherapy required patients to leave that life behind, with notice of only hours or days, for a period of 3–4 weeks. They described this experience as one in which “my whole world changed overnight” or “you’re taken out of your life. Everything stops” or “I am not part of my previous world any more. I’ve been removed from it, sidelined.” One participant noted: “You don’t get to line up things and people to step in and pick up your life where you left it. It just comes to a screeching halt... All your obligations all of a sudden just go out the window because you can’t be there.” Another patient reflected: “I say I got abducted. It wasn’t induction. It was abduction.”

The metaphor of abduction also captures the experience of the hospital as an alien place. Once admitted, life no longer took place in familiar settings, revolving around familiar routines, with a sense of personal control and predictability. Instead, participants were rushed into a new and unfamiliar world, where life revolved around a sophisticated treatment protocol conducted in an isolated hospital room:

“[Induction] can suck you into a vortex and everything is happening to you at once and all the blood tests and suddenly you’ve got this Hickman Line and then the next thing you know you’re getting treatment and it’s just like whoosh, you literally, your life is not your own at that point for a while.” (Participant #5127)

Lastly, the metaphor of abduction also captures the sudden loss of physical well-being, and the dramatic and traumatic changes in the nature, predictability, and controllability of bodily experience. As one participant recalled: “You scare yourself, especially when your face is gaunt and you lose 35 pounds and you’ve got no hair.” Another remarked:

“This scorched earth induction - you can’t imagine it. You can’t imagine what happens... I was near death. There were nights when my heart rate was down to 38.

And they kept me going...And I had no lining at all in my mouth, that was unbearable. It felt like somebody had carved out a new mouth and nasal cavity for me. Nothing felt normal.” (Participant #5025)

3.4. The psychological response to the initial trauma

Participants also described how they responded to the initial trauma during the period of hospitalization and how they managed to cope with it. The main inter-related elements of this experience were: (1) *Trust and reassurance* – finding a sense of safety in the trusting relationship they developed with the medical team; (2) *Surrendering control* – reducing the overwhelming anxiety about the treatment process and outcome by transferring their own decision-making responsibility for their care to the medical team; (3) *Preference for limited information* – wishing for minimal and gradual information-giving, to avoid feeling overwhelmed; and (4) *Present-oriented agenda* – maintaining a focus on getting through the immediate initial treatment, and avoiding thoughts about the follow-up treatment, or overall prognosis.

These inter-related responses to the traumatic experience, and their associated emotional benefits, are detailed below:

(1) Trust and reassurance—Participants expressed a strong sense of trust in their health care providers, which provided a sense of “safety” in the midst of the chaotic and traumatic experience of the illness. This was expressed first and foremost as trust in the expertise and competence of the medical team. All participants considered themselves “lucky” to have access to the medical setting that they were in, and considered their treatment to be provided by “top experts” in a “cutting edge facility,” which is “the right place to be, and the best place to be”:

“The more I learned about this facility and its reputation in the medical community, references that I heard from other people after I started asking, talking to other people, there was a huge sense of relief when you hear about the background here and what they do and how they do it. I knew I was in a system that basically was very professional in terms of where they are at in the medical community...It’s not another ward in a hospital somewhere where they deal with this on the side. You look at it and say, ‘I’m going to get better treatment,’ so you go with the flow and you work with the people here...I’m fighting with a team that is really acknowledged in Canada and in the world.” (Participant #5107)

The idea that they were being “taken care of” by experienced experts was associated with a sense of “relief”, without needing “to question or worry about what the medical team was doing.” As one participant noted: “There’s not too many things the medical team haven’t seen, so you feel safe, it’s not, ‘well, we’ll try this.’ [Instead] they say: ‘we’ll do this and you’ll be okay.’ It’s a big difference.” Another participant remarked: “I’m in the right place. That was the important thing, knowing that we were going to be taken care of. That was really important.”

Trust was based not only on the perceived expertise of the medical team but also on the strong relational “bond” that patients developed with them, particularly with the nurses, with

whom patients interacted most frequently. This connection to the entire inpatient team represented a secure emotional base for patients that helped to protect them from overwhelming anxiety. One patient described the significance of these relationships and the safety they provided as follows: “They kind of make a circle around you and kind of protect you and you feel safe.”

The sense of trust and reassurance that patients experienced from their connection to the medical team was supported by the consistency of care and the “familiar faces” in the inpatient setting. The humanizing effect of these relationships was enhanced by the feeling of patients that members of the team related to them as “a person,” that they were willing to engage with them in conversations and jokes beyond the illness, and that they were interested in getting to know them. As one participant noted: “I’m amazed at just how much they remember about me and my family. Everybody on the floor gets to know you... They all just carry on like you’re their only patient the whole time.” Another related: “I never ever felt like a hospital number. I never felt like some patient in a hospital... I didn’t feel completely like myself, but I felt like me.” This perception of a genuine and caring attitude by the health care team was experienced as an invaluable anchor in the midst of the trauma, which helped reduce the anxiety associated with it.

(2) Surrendering control—While hospitalized, participants described a sense of “handing over control” to the medical team, “turning over my fate to the doctor,” and putting their lives “in the hands of the team.” This posture of surrendering control was described as emotionally beneficial during the inpatient stay. As one participant noted: “You can relax and say, ‘okay, they know what they’re doing, I’ll just give it over.’ Like the Catholics used to say, ‘offer it up’.” Correspondingly, participants described the subjective sense of surrendering control as allowing them to feel “detached” from and “less anxious” about the treatment, because it was not under their control, not their “responsibility”:

“I’m not worrying about the treatment. I probably should be much more. I don’t feel anxiety about things that at the moment I don’t have any ability to change. If I can’t do anything about it, I’m not going to worry about it. If I could do something about it, then I’d concentrate my thoughts and maybe get worried, get anxious, at least lay out a plan of attack on how to deal with it. But the plan at the moment on how to deal with my condition is to basically follow instructions here, and that’s about it.” (Participant #5065)

The position of surrendering control was often perceived as the only feasible coping strategy, because of the complicated nature of the illness and its treatment, the anxiety associated with reflecting about it, and because the fatigue and other physical side-effects greatly impaired participants’ ability to concentrate:

“I was learning as I was going because we were going into the system and you’re absorbing stuff and you’re asking questions and they are telling you stuff. You are not getting everything yet because you don’t have time to absorb it. You’re just trying to stay awake and just work with everybody.” (Participant #5107)

The experience of surrendering control was also associated with a strong desire to comply with the expectations and directions of the medical team. However, this compliance was

perceived not as a position of passivity, but rather as an active strategy to maximize the chance of survival. Thus, patients gained a sense of personal agency by doing the best they could to be “good patients,” to “follow instructions, and to be “as agreeable and as positive as possible:”

“I think a lot of the reason I’m doing not so bad is that I did what the nurses said. If the nurse told me, “we haven’t seen you out of bed today,” I got up and walked around the hallway. And she’d say, “that’s only once. You should do it twice,” so I’d do it twice. If I didn’t eat and she saw I didn’t eat, she’d tell me to eat...I gotta say, that’s the big point. If you do what they tell you to do, you will be healthy. If they tell you to drink six glasses of water, make sure you do it. You gotta pay attention to what they tell ya. If they told me I hadn’t walked that day, I’d crawl out and do it. And I think that has a lot to do with why I’m feeling good, too, ‘cause I do what they tell me.” (Participant #5049)

(3) Preference for limited information—A third inter-related theme that emerged in our analysis was a preference expressed by participants to minimize access to illness-related information, allowing the medical team to decide how much they should know about their illness and treatment. Once diagnosed, they found that there was “just too much information to take in” and that this information was “too overwhelming.” Therefore, participants wanted to be given only necessary but limited information, at least in the beginning:

“I knew I had to go in for treatment. I didn’t want to think about it. I just wanted the hospital to take care of it. I just thought, ‘I don’t want to know about the numbers and the percentages ‘cause it’s not going to help me’.” (Participant #5217)

Importantly, participants often commented that their health care providers seemed to understand that they could not process much information at this phase, and therefore responded by “trickling the information.” As one participant commented: “I know that [my hematologist] doesn’t give me all of the information, but I also recognize that maybe it’s best I don’t have all the information yet.” Some participants described a sense that certain information was withheld from them, but they perceived this withholding as an appropriate tactic designed to “protect” them, and prevent them from feeling too “anxious” or “overwhelmed” while enduring the treatment:

“I had diabetes when I was in the first induction phase. That’s a common side effect from the steroids that you end up getting diabetes, and they jumped on that and that was being monitored. I think I didn’t realize until later that I had gone into acute renal failure. They mentioned a little bit that my kidneys were being challenged. Then, when I read the chart later, [I saw] ‘acute renal failure.’ I thought, ‘No, it’s probably better they didn’t use those words with me because that’s scary.’ They judge how much the patient needs to know and of course deserves to know and has the right to know, but sometimes softening the language a bit so patients are not bowled over.” (Participant #5127)

It is important to note that although participants generally wanted the medical team to “soften” or “trickle” information about risks or adverse effects for them, they also expressed dissatisfaction with this strategy when treatment did not go as planned. In such instances,

patients retrospectively expressed the wish that they had known more, so they could have been better prepared to deal with treatment failure or treatment complications:

“I didn’t think that treatment failure was an option. I just thought that you’d be treated and you’d be fine. I think that was a little bit disappointing. I know why I wasn’t informed of the possibility that the treatment might fail because they don’t want you to worry about it. They’ll say, ‘This is your treatment,’ and then afterwards it’s like, ‘Oh yeah, that happens to a lot of people. You’re not the only one [with treatment failure].’ It’s like maybe I would have liked to know that it’s a possibility that the treatment won’t work just to feel a little bit more emotionally prepared for it. I think in that respect, I did feel that maybe I would have liked to be informed. On the other hand, I do understand why they don’t tell you either because it can be a very discouraging thing to think that ‘oh well, it might not work anyway’.” (Participant #5283)

(4) Present-oriented agenda—Participants described being focused on getting through the immediate inpatient treatment, and avoiding thoughts about the next steps, or overall prognosis. This immediate focus was perceived as appropriate and beneficial because “There’s no point in me worrying about the future or about what the options are until I get through what I’m getting through now”:

“The doctors very quickly told me, ‘this is what these drugs are going to do to you. This is what we’re gonna be doing to you for the next 28 days.’ The one area where I kinda didn’t take it in was, ‘what are we gonna do after the 28 days? What does consolidation look like? What is the prognosis of the disease? What are some of the major problems we’re looking for, and what does the first induction phase mean?’ Kinda the longer-term view to my treatment, I didn’t take in until it happened, and so during the first induction thing, I was like, ‘okay I know I’m gonna lose hair, gotta watch for that. I know I’m gonna lose weight. I know I gotta try and eat. These are things that I know.’ And it was the longer-term treatment plan that I just didn’t take in because I was focused on the day, or the week, or the blood counts for that day, as opposed to worrying about year two and stuff like that.” (Participant #5041)

Similar to the previous theme, participants described the focus on the immediate treatment phase as being created jointly with the medical team. Discussions with the team were about “trying to keep you on task”, and did not include extended information regarding future steps, until the uncertainty of the current step was resolved. As one participant noted: “They don’t complicate you with twenty steps down the road, when it doesn’t really matter if you don’t get past the one in front of you”:

“I have to admit my doctor has made me think ‘one day at a time. Let’s just watch, see what we’re doing today. Don’t worry about what’s going on up there, what’s going to happen in the future. Let’s just deal with what you’re doing now. What can we do now to make it better? Then, based on how you recover, then we’ll decide what the next step would be.’ That, for me, was the most helpful approach.” (Participant #5235)

4. Discussion

The high risk of mortality and the sudden onset, dramatic course, and intensive treatment of acute hematologic malignancies represent an enormous threat to individuals who are affected. The present qualitative study enhances our understanding of this complex experience, and reveals new insights. The findings demonstrate not only the traumatic experience of receiving the diagnosis and immediate inpatient treatment, but also the components of this experience that helped participants cope.

The traumatic nature of a cancer diagnosis has been recognized previously and posttraumatic stress symptoms have been documented in breast cancer patients and in samples with mixed cancer diagnoses [17]. Previous quantitative and qualitative reports highlighted the psychological distress that is associated with the diagnosis of acute leukemia [1,4,6,7], as well as physical distress during induction chemotherapy [3,5]. The current study illuminates the nature of the trauma experienced by patients with acute leukemia, equating it with a sense of being “abducted” by the illness. This metaphor of abduction captures the experience of being suddenly removed from one’s present life and being transported into that of a hospitalized patient, fighting for survival. It also captures the dramatic loss of physical well-being, which had previously been taken for granted. The feeling of being “abducted” by the illness that was evoked by the sudden diagnosis, immediate threat to life, and urgent inpatient treatment may similarly occur with the “incomprehensible shock” of incapacitating physical injury [18] or with the traumatic stress triggered by other acute medical conditions [19].

Our study also elucidated the immediate attempts by patients to respond and cope with this trauma. This inherent duality of trauma and coping may explain why trauma is associated not only with distress, but also with posttraumatic psychological growth [1]. Patients described four inter-related factors that enhanced their capacity to cope with the trauma of acute leukemia and its immediate treatment. One of the most important of these was the sense of trust in the medical team. This trust and reassurance derived perhaps partly from the perceived expertise of the treatment team in a highly specialized tertiary leukemia center. Equally important, patients experienced this trust as deriving from the authentic human connection they felt with the team. Although the literature on patient-health care provider communication typically focuses on communication skills [20], our findings echo those of Wright et al. [21], who observed that patients tend to regard their health care providers as emotional attachment figures, who either succeed or fail at providing a sense of safety at times of significant dependency and vulnerability. This would suggest that the development of skills in building trust and emotional attachment security in patients who feel anxious and threatened should be end-goals of the training of health care providers in communication skills [22].

Although the recent literature on adaptation to cancer emphasizes the importance of empowering patients [23], our findings demonstrate that surrendering control may be an adaptive response to the shock of the diagnosis of acute leukemia and the intensity of the inpatient induction chemotherapy treatment. This response fits with Wallston’s [24] analysis of the potential emotional benefits of adopting an external locus of control at times of illness

and stress, allowing “powerful others” to control one’s health. The belief in powerful others may be especially adaptive in the context of a highly life-threatening illness and of being displaced from one’s familiar environment to an inpatient care unit, which may be experienced as responsible in totality for the structure of patients’ lives [25].

We also identified in patients a preference to initially know as little as possible about the illness and its treatment, focus on getting through the immediate inpatient treatment, and avoid thoughts about the next steps or overall prognosis. This is consistent with a recent literature review that reported a tendency of patients with hematological disease to avoid medical information during treatment [26], and with research suggesting that patients with hematological malignancies, compared to those with solid tumors, prefer a more passive role in decision-making [27–31], especially when in an inpatient unit [28]. Health care providers should be sensitive to the reluctance of many patients in this circumstance to receive information that is too complex or threatening for them to process at that time. Health care providers must find ways of speaking honestly without overwhelming their patients, a task that may be facilitated by relationships with them that support emotional attachment security [21]. It is also important to note that the patients’ reported information preferences may have been jointly created with the medical team with an implicit agreement to avoid certain discussions [32]. Lastly, although the provision of gradual, step-by-step, and limited information may help patients to avoid becoming overwhelmed, when there are adverse outcomes patients may subsequently regret their lack of informed participation in treatment decisions.

Although a number of participants were interviewed while undergoing induction chemotherapy, limitations of this study include the retrospective nature of some of the data regarding the experience of diagnosis and initial treatment. However, all the retrospective accounts were provided within months following the induction chemotherapy, and can be considered valuable as memories of trauma tend to remain vivid over time [33]. Further, the capacity for reflection may actually be greater after the acute crisis has passed. The findings of this paper are limited to the experience of patients during the initial period of diagnosis and induction treatment; a subsequent paper will describe the experience of patients further along the trajectory of the disease, and demonstrate changes in coping over time. Finally, the themes that emerged during the interviews are largely from the perspective of those who still perceive some prospect of recovery; only one participant was receiving only supportive care at the time of the interview.

Our findings may help to inform the development of interventions to improve coping and reduce the traumatic stress experienced by patients undergoing induction chemotherapy. Such interventions may emphasize factors that were identified in this study as useful in the adaptation to the trauma. These include the importance of trust and relatedness, and of a present-focused agenda. However, such interventions must be carefully tailored to the symptoms of the patient and their capacity to engage in the treatment process at that time. Many factors related to the illness and its intensive treatment may limit the ability of participants to concentrate and engage in the intervention at that time. Interventions that have been tested in stem-cell transplantation units may be feasible in this setting, including relaxation [34], mindfulness training [35], and mindfulness-based cognitive therapy [36].

Interventions that have been employed to relieve symptoms in other populations suffering from posttraumatic stress [37] may also be of value for this purpose in patients with acute leukemia. Finally, it is important to recognize that family caregivers may experience vicarious posttraumatic stress and may also benefit from stress-reduction interventions [38]. In this regard, our next qualitative research study aims to interview the family caregivers of the participants of the current study, in order to understand their respective experience.

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Table 1

Characteristics of study participants ($N = 43$).

Sample characteristics	Description
Gender (male)	25/43 (58%)
Age (years) (mean [SD]; range)	47 (12.9); 21–71
Marital status	
Married or common-law relationship	31/43 (72%)
Separated/divorced/widowed	5/43 (12%)
Single	7/43 (16%)
Canadian born	29/43 (67%)
Education	
High School or Less	5/43 (12%)
College/University	38/43 (88%)
Disease type	
AML	35/43 (81%)
ALL	8/43 (19%)
Treatment status at time of 1st interview	
Induction/re-induction	6/43 (14%)
Consolidation/intensification	27/43 (63%)
Maintenance	4/43 (9%)
Bone marrow transplant	5/43 (12%)
Supportive care	1/43 (2%)