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Review article: psychological aspects of home parenteral nutrition, abnormal illness behaviour and risk of self-harm in patients with central venous catheters

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SUMMARY

Background

Home parenteral nutrition is established as standard management for patients with chronic severe intestinal failure. Although the treatment is welcomed by many patients, there are psychological consequences of living with a central venous catheter and there are associated restrictions to the lives of patients on home parenteral nutrition. A subgroup of home parenteral nutrition patients may use their central venous catheter for self-harm.

Aims

To review existing literature relating to abnormal psychological responses to central venous catheters in patients receiving home parenteral nutrition and the psychological meaning of living with a central venous catheter. It also attempts to alert professionals to ways in which patients may self-harm using their central venous catheters.

Methods

A literature review was performed. Data were obtained both from literature searches and from personal experience at a Psychological Medicine Unit attached to a large home parenteral nutrition centre.

Results

Patients receiving home parenteral nutrition may use their central venous catheter in various ways to self-harm. Motivation may be conscious or unconscious. Sequelae of such self-harm may be life-threatening.

Conclusion

This paper concludes with recommendations for best practice with respect to the psychological management of home parenteral nutrition patients in whom central venous catheter abuse is suspected.

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INTRODUCTION

The first patients on home parenteral nutrition (HPN) were discharged from hospital in the late 1960s.[1] Subsequently, HPN has become standard treatment for patients with chronic severe intestinal failure. For these individuals, HPN is both life-saving and life-prolonging. Although HPN remains a relatively rare treatment, data reported by the British Artificial Nutrition Survey suggest that both the point prevalence and the period prevalence of treatment in adults in the UK are steadily increasing.[2] Historically, prevalence in the UK is similar to that in other European countries[3] although lower than in the USA and Japan where use of HPN in patients with terminal cancer is much more widespread.[4–6]

Long-term parenteral nutrition is associated with significant morbidity and mortality. The physiological complications related to intravenous feeding or to short bowel syndrome and the other causes of chronic intestinal failure (e.g. chronic intestinal pseudo-obstruction), have been extensively reviewed.[7–11] The physiological complications are relatively easily recognized and as a result, strategies to avoid them can be formulated.[8] However, the psychological difficulties encountered by patients receiving HPN are more difficult to identify and especially to quantify. Living with HPN poses substantial psychological challenges related to the need for scrupulous attention to hygiene, restriction of normal patterns of eating and drinking, tethering to an overnight feed as well as the additional challenges which may be posed by having a stoma. These can all be very disturbing and distressing and, at times, will test even the most psychologically robust patient. However, not all HPN patients are 'psychologically robust' and the very treatment that keeps these patients alive and well nourished may also become the focus of neglect, self-harm and abuse.

While doctors managing patients receiving HPN are adept at the avoidance and management of the physiological complications of long-term parenteral feeding, they may be inadequately trained to recognize and assess the psychological difficulties faced by this patient group. This paper reviews the current literature relating to quality of life and psychological issues in patients receiving HPN. This is followed by a description of some of the specific psychological aspects of having a central venous catheter (CVC) and a review of the literature on self-harm and abnormal illness behaviour specific to this patient group. Some vignettes from clinical practice are presented. The paper concludes with suggested recommendations for best practice with respect to psychological management of HPN patients in whom CVC abuse is suspected.

QUALITY OF LIFE OF HPN PATIENTS

The quality of life experienced by patients receiving HPN has been the subject of a number of recent reviews.[12, 13] Studies have tended to focus on quality of life in adult HPN patients and have compared quality of life scores with various control groups. These include patients with short bowel syndrome not receiving HPN and patients who had undergone and survived intestinal transplantation.[14–16] Although it is difficult to compare studies that have different control groups and use different instruments to measure quality of life, scores in patients receiving HPN are generally fair, although lower than healthy controls.[13] Unsurprisingly, quality of life in patients receiving HPN appears to be influenced by a range of other factors including the underlying disease process, presence or absence of a stoma and time spent in hospital.[13] Interestingly, patients receiving opiate analgesia or regular benzodiazepines have been noted to have significantly lower quality of life scores in a single study.[17]

A significant minority of patients (35–43%) receiving HPN report impaired social functioning and restricted activity.[13] This relates to restrictions resulting both from the parenteral feeding and from the underlying disease process. Sexual functioning was also reduced in up to 60% of HPN patients although there was considerable variation between studies.[13] The number of patients receiving HPN who were still able to work also varies between studies. In some studies, only 20% of patients were able to work with the remainder being too unwell;[18] however, in other reports, up to 40% of patients remained in full-time employment with a further 50% in part-time employment.[19] This is of particular relevance in the USA where employment status and health insurance coverage may be co-dependent.

PSYCHOLOGICAL ASPECTS OF HPN

Because of both the invasive nature of the treatment and the gastrointestinal (GI) illness and surgery prior to HPN being instituted, patients receiving HPN face great psychological challenges.[20] These relate to a range of issues including the loss/grief reaction to surgery and subsequent bowel resection, the loss of normal eating patterns, the restrictions imposed by parenteral feeding regimens and the changes in daily life, and factors relating to the CVC and its effect on body image. Depression is common in patients receiving HPN with depressive symptoms seen in up to 80% of patients.[13] Again, regular use of opiates and/or benzodiazepines appears to be associated with a higher incidence of depression.[17]

Many patients on HPN will take little or no food orally and oral fluid intake may be heavily restricted. Both the sensations of eating and drinking, and of taste may be diminished or lost to them. Food, eating and drinking fulfil multiple social functions. Meals are often eaten together with family or friends and represent one of the most social aspects of the day. Special meals are planned for important occasions, where a large emphasis is placed on the use of food and drink as a celebration. A large proportion of socializing revolves around eating or drinking, and the ability to share this pleasure with family and friends is an important social experience. Missing out on this may result in a sense of social exclusion.

Incorporating HPN into one's everyday lifestyle may involve a substantial change in daily routine and may limit social activities, leaving patients feeling discontented and sometimes resentful towards their treatment. HPN is associated with a commitment to running long intravenous infusions, often for 12–18 h/day. The constant need for care and supervision of the equipment can be severely restricting with, some patients feeling that it restricts their ability to socialize. In addition, patients are restricted in their ability to travel and/or to maintain a job because of the high demands of time and management that are needed for the careful attention to satisfactory HPN care.

The insertion of a CVC may pose a threat to the patient's body image. Common fears can include how one will be perceived by family and friends and to strangers with whom one may have to have everyday encounters. There may also be apprehension as to how a sexual partner (especially a new partner) will view this alteration to the body and this commonly results in complicated psychosexual anxieties, often leading to phobic avoidance and/or substantial inhibition. These issues may combine with the above-mentioned aggravations relating to the impact of the CVC on social activities and daily life. If a mental state is present in which a sense of resentment is dominant, the patient is at risk of becoming either neglectful of his CVC care or aggressive towards the CVC itself. In some cases, the CVC may be used as a vehicle to cause injury to the body. The literature regarding the self-abuse of CVCs is reviewed below.

PSYCHOLOGICAL ASPECTS OF LIVING WITH A CENTRAL VENOUS CATHETER

The insertion of a CVC may arouse strong psychological issues with the initial introduction of the line evoking feelings of invasion from a foreign body.[21] The skin is both a physical and psychological barrier between the inside and the outside world. The psychoanalyst Anzieu describes the skin as having several roles.[22] One is to act as a psychic spatial separation between the environment and our bodies. Skin becomes a protective barrier, marking the division between ourselves and the world, and essential to contain and retain our bodies' contents. By penetrating the skin with the CVC, there is a break to this protective barrier and the body is invaded, which may in turn interpreted by the patient as an attack. The act of breaking and entering the body by the CVC may induce fantasies of physical or sexual violation.[21] In the patient's unconscious, these feelings of attack can lurk, and with this comes an instinctive need to defend him/herself and his/her body against the medical staff, who often are seen as the perpetrators.

The intrusion into the body by the CVC may raise multiple primitive fears, not dissimilar to those raised in patients with a stoma. Even if consciously wanted and appreciated, the CVC may unconsciously be felt as an attack on the individual's gender identity. Linked with this, it can be felt as an attack on adulthood, as if the adult capacity to be independent, and to eat and drink normally has been replaced by a infantile attachment to liquid feed, or even a pre-infancy state of 'placental nutrition', as if one has regressed not just to neonatal dependence, but to an earlier pre-birth state of total dependence on a placenta.

The CVC may also be viewed as the object linking the patient to the hospital. While the CVC remains *in situ*, the patient is dependent on the hospital and its staff to help care for and manage the line, especially if the line becomes broken or infected. Even without these complications the patient will have to return to the hospital regularly for out-patient follow-up. One metaphor is of the catheter acting as an umbilical cord, creating a binding relationship with the patient, who is dependant on the hospital to administer the motherly duties of care, protection and nutrition.[21] The act of a patient deliberately cutting the CVC has been linked to the patient's wish to regain independence and to 'prove' that they are not dependant on the hospital.[23]

The length and route of the CVC, from its start to its end point, can create a sense that the body is somehow divided, with some patients reporting feeling that the 'wholeness' of their body has been lost.[21] Losing this sense of bodily integrity may pose serious problems for the patient's body image while the CVC is in place.

In addition, patients may be worried about the way the CVC is perceived by others. They may fear that the bulge of the exit site will be visible under clothes and may feel apprehensive about how friends and family will react to the sight of the catheter. Only by incorporating the image of the CVC into their mental body picture can patients begin to regain a feeling of cohesion with regard to their body image.[23] Young patients who refuse to look at their CVC or even have it in their perceptual field may take longer to accept and manage their CVC.[23]

Symbolically, the CVC can be seen as representing a site of exchanges between the body and the outside environment. Blood can be extracted and removed, while fluids and drugs can be injected into the body. In this way, the CVC may represent both the freedom and the control: it is a space where exchanges between the body and world can be made freely at a site where it normally would be unable to do so. Hence, it allows a certain amount of control for the patient over what goes in and out of their body. With this 'site of exchanges' comes the fear that other, uncontrolled material may enter the body. Fantasies reported from children with CVCs include the fear that germs, insects or even monsters can enter them through the exit site.[21] As a result, the CVC may be viewed as a dangerous object. In addition, the sight of blood when aspirating from the catheter, can evoke feelings of anxiety about death and the fear of literally 'playing with your life in your hands'.[21]

There are many conscious reasons why patients may feel resentful or angry about their CVC. They may be afraid at the prospect of the pain it may cause, during both insertion and removal of the line and during any complications that may occur whilst the line is in place. Having a long-term CVC means a commitment to its upkeep and care, especially with the patient living independently at home. The need for constant personal cleanliness, especially around the catheter exit site, and the necessity of a consistently clean home environment could be viewed as an imposition. Above all, these procedures are time-consuming and may be viewed as imposing restrictions on the patient's life with regard to socializing, travel, work and intimacy. Importantly, the presence of the CVC serves as a constant and often permanent reminder of being unhealthy, even during times when no treatment is being administered or the patient is considered 'healthy'.[23] Over and above these conscious reasons are the more deep-seated unconscious factors which complicate the relationship with the CVC – fears of intrusion, gender confusion and infantilization – as described above.

Ultimately what develops between the patient and their CVC is a complicated relationship. For some patients, the CVC may allow them more independence and freedom and a new lease of life, and the catheter can mean the end of multiple painful and intrusive attempts at peripheral venous cannulation. Balanced against these positive aspects are the many conscious and unconscious fears that the patient may have about their CVC and its presence in their body. The internal psychological security and robustness within each patient will have a substantial impact on his/her capacity to accept the CVC as part of his/her body and to care for it accordingly. If primitive psychological fears and insecurities are too strong and cannot be balanced by an adult, rational set of thoughts and behaviours, then the patient's acceptance of, and management of, the CVC may be difficult and fraught with complications.[23]

SELF-HARM AND ABNORMAL ILLNESS BEHAVIOUR

The term 'abnormal illness behaviour' covers a range of behaviours from hypochondria and somatization to factitious disorder and malingering.[24] What these disorders have in common is that, at least in part, the symptoms or signs of illness with which the patients present have been feigned or produced (consciously or unconsciously) by the patients themselves. The disorders differ with regard to whether the patients consciously or unconsciously produce their symptoms and if the motivation behind this symptom production behaviour was conscious or not[24] (see Table 1).

Table 1. Abnormal illness behaviours

	Conscious motivation	Unconscious motivation
Conscious production of symptoms	Deliberate self-harm Malingering	Factitious disorder
Unconscious production of symptoms		Somatization disorder Conversion disorder

Much has been written about self-harm and the different forms it can take.[25] Numerous theories exist describing why this behaviour occurs; often relating to early childhood experiences, and specifically to the earliest relationships with mother and father, and deep-seated conflicts.[25] Deliberate self-harm is seldom an explicit suicide attempt.[26] Equally, previous self-harming behaviour is not necessarily present prior to all suicide attempts.[26]

Malingering is one of the conditions found on the self-injurious behaviour spectrum. Patients are consciously motivated to produce or feign their symptoms to achieve secondary gains.[27] These gains may relate to some kind of monetary compensation such as state benefits or a settlement from a court case. Alternatively, the gain can be time off from work or obtaining drugs of some description.[27] The main distinction from other conditions is that malingering can only be diagnosed when there are clear secondary gains for the patient and their motivation is conscious.[27]

In factitious disorder, motivation is unconscious, and the patient may incur severe losses such as the development of real medical complications induced by unnecessary surgery or the break-down of a personal relationship when the patient's role in the creation of symptoms is revealed.[27] Factitious disorder is characterized by the intentional production of symptoms, which is unconsciously motivated and allows the individual to assume the sick role, albeit often at a high physical or emotional cost.[27, 28] This 'sick role' may embody several psychological gains for such individuals such as a fulfilment of their dependency needs or their need for attention, which is normally given to them by hospital staff and worried relatives.[28] Patients tend to be female and a high proportion work in a health care or medical setting.[27–29]

Munchausen syndrome is the most extreme and chronic form of factitious disorder seen in about 10% of patients within the spectrum of factitious disorder.[24, 30] These patients are more often male and most have some degree of sociopathic behaviour or personality disturbance.[24] They generally present persistently to accident and emergency wards and often evoke antagonistic feelings from staff which results in the fostering of bad relationships. There has been a suggestion that these self-injurious episodes are more likely to occur after a stressful life incident.[24]

In patients with somatization disorders, multiple recurring somatic complaints occur not fully explained by any known general medical condition. There is a 72% co-morbidity with personality disorder,[31, 32] and the course of the condition is usually chronic and fluctuating, rarely completely remitting.[33]

In patients with conversion disorders, previously known as hysterical conversion, the voluntary motor and/or sensory functions are affected, suggesting an underlying neurological or other general medical condition. It is usually preceded by psychological conflict or other stressful situations and begins abruptly.[33]

ABNORMAL ILLNESS BEHAVIOUR IN PATIENTS WITH CENTRAL VENOUS CATHETERS

All of the above-mentioned forms of abnormal illness behaviour can occur in patients with central lines. Very little is written specifically on self-harm via CVCs and the literature that does exist is in the form of anecdotal case reports; the authors were unable to find any literature describing cases where unconscious poor self-care or neglect have resulted in harm to the patient. There are, however, sporadic case reports describing patients who have harmed themselves by either cutting or injecting their CVC.[23, 34]

A report from Germany[34] describes a 30-year-old female patient who cut her CVC whilst momentarily unobserved by staff. She had a long psychiatric history that included admissions to hospital for self-inflicted injuries, suicide attempts and drug abuse. She repeatedly removed peripheral venous cannulas, and as a consequence a CVC was placed. On her third day in hospital, after a visit from her husband, she cut her central venous line using scissors. The patient was eventually transferred to a psychiatric unit without a CVC or a gastric tube.

In another report, a 20-year-old female patient could not accept her CVC. In what was described as an almost suicidal act, she cut her CVC. The authors described (rather optimistically in our opinion) this act as a way of 'attempting to express her independence; to show that she can be free from the restrictions the catheter placed on her and the dependency she has on the hospital and staff'.[23]

There have been other case reports of aggressive acts towards CVCs, including one describing a paediatric patient who self-injected oral Benadryl via her Hickman catheter.[35]

However, a majority of reports that involve abuse via a CVC are seen in patients with factitious disorder or in cases of 'Munchausen syndrome by proxy'.[28, 36, 37] In a longitudinal study describing 16 patients with a CVC who were victims of Munchausen syndrome by proxy, line sepsis occurred in 56% of patients.[37] The high prevalence of infection and contamination of the lines was attributed to the mothers of patients who deliberately used the CVC as a vehicle to cause further harm to their children. The catheters were used to inject foreign bodies; bacterial cultures were often shown to contain faeces and saliva, or the catheters were used to administer unnecessary medication potentially resulting in drug intoxication. Two children died as a direct result of abuse through their catheter; one due to line sepsis and the other due to the injection of air into the line resulting in an embolism.[37]

Insertion of a CVC in children who suffer from Munchausen by proxy syndrome raises the possibility of easy access allowing further (potentially lethal) abuse. Similarly, if adult patients with factitious disorder have a CVC inserted, they are provided with an opportunity to cause further physical self-harm.

Two case studies involving suspected abuse of CVCs in patients with factitious disorder are striking. One report describes a 34-year-old pharmacist who had been found to be ingesting busulfan, an alkylating agent used to treat chronic myelogenous leukaemia patients on the ward on which she worked.[36] The busulfan ingestion induced severe aplastic anaemia, with which she was admitted to hospital on two separate occasions. Subsequently, she was hospitalized three times for polymicrobial sepsis because of injection of faeces into her CVC. She had a documented history of anorexia which had resulted in hospitalization and she reported other incidents of taking unprescribed medicine to induce sickness. The other report describes a 29-year-old nurse originally presenting with septic arthritis in her knee.[28] It was suspected that the patient was self-injecting faecally contaminated material into her knee. She also required CVC ization and subsequently developed several episodes of CVC sepsis. Of note is that both these patients worked in the health sector.

EXPERIENCE FROM ST MARK'S HOSPITAL

In the literature describing the use of CVCs for self-harm, most reports are of cases where the patient is already known or suspected to have factitious disorder.[28, 36] In the case reports presented below, none of the patients had a diagnosis of factitious disorder or a past history prior to their CVC insertion that would strongly suggest the presence of factitious disorder. In keeping with guidelines for best practice in the psychology/psychotherapy literature, some of the personal details of these patients have been disguised to protect confidentiality.

Case 1

Mr B is a middle-aged male. He is married with four children, and previously worked in a caring profession. He was diagnosed with Crohn's disease at the age of 15 and subsequently underwent a right hemicolectomy and ileal resection followed by further small bowel resections leaving 180 cm of small intestine. He was eventually commenced on HPN in his 30's. Initially, nurses noted that he trained well on HPN with 'faultless procedures'. However, following discharge he was readmitted to his local hospital on multiple occasions with episodes of CVC sepsis, some requiring intensive care (ICU) admission. After a fourth admission for line sepsis he was transferred to St Mark's Hospital (SMH). He was seen by the psychiatrist at SMH and spoke openly about his line infections. On at least three separate occasions, he admitted that he had injected water and then faeces into his CVC. On the most recent admission, this was because of a chronic area of unresolved difficulty with his wife, to do with issues of trust, deceit and dishonesty. At the time of injecting himself with stomal output, he was in a state of fury towards her, self-pity and anger towards himself and high levels of despair. Immediately after self-harming, he telephoned his local hospital to alert them to what he had done. Ongoing psychiatric management was organized for him. In this case, his motivation was primarily conscious (a wish to harm himself, as well as the wish to inflict harm on his wife). His diagnosis was of depression, deliberate self-harm and some degree of personality pathology.

Case 2

Mrs C is a 59-year-old woman with short bowel syndrome secondary to Crohn's disease. During her initial admission to SMH it was noted she became very friendly with a 44-year-old male patient (Mr A). After discharge it was noted that she 'organized' her outpatient department (OPD) appointments to coincide with his. Mr A was readmitted to the hospital on three occasions in the first year after his TPN training with flare-ups of his illness. On each of these occasions, Mrs C was admitted within 48 h with CVC sepsis. Although she was never confronted about these admissions and their origins, the staff on the ward had a strong speculation that the sepsis was self-induced. It was known that she and Mr A were in regular telephone and 'text message' contact with each other. She refused a referral to the psychiatrist.

The provisional diagnosis in this case is of an emotionally unstable/deprived patient, who orchestrates not only her OPD appointments, but also CVC infections, through deliberate contamination, to be admitted and if possible share a bay with another patient. Once again the motivation is primarily conscious. Her refusal to agree to an appointment in the Psychological Medicine Unit bodes poorly for her long-term CVC care and prognosis.

Case 3

Ms D was a divorcee with three young children who had short bowel syndrome secondary to Crohn's disease. HPN was initiated at age 41 and she suffered a number of episodes of CVC sepsis in the following 2 years. At age 43 she was admitted to SMH having been transferred from her local hospital with seizures and acute renal failure secondary to CVC sepsis. She saw the psychiatrist for the first of many consultations. She had become dependent on alcohol, lost her marriage and lost custody of her three children. She felt relieved about this as she knew she could not adequately care for them, but also filled with guilt and self-reproach. On such occasions she would drink excess and could then 'not recall how she managed her CVC'. In the ensuing 2 years she was admitted on nine occasions with CVC sepsis. At age 46, she was again admitted to her local hospital with a further episode of sepsis and line infection, and died in hospital. The psychiatric diagnosis was a combination of depressed mood, episodic alcohol abuse and poor self-care. Here, the motivation was less conscious than in cases 1 and 2.

Case 4

Mr E is a male in his 40's struggling to come to terms with his stoma and CVC, having had a resection for a colonic cancer in his 30's, followed by radiation enteritis and short bowel syndrome. Living alone, he became depressed and dependent on alcohol. On a particular morning his stoma bag leaked three times, soiling his clothes. On the third attempt at changing his T-shirt, he realized that if he pulled it over his head it would soil his hair. He reached for a pair of scissors to cut the T-shirt off him. In a state of fury, and frustration he then deliberately severed his CVC line with the scissors. He subsequently clamped his line. Twenty-four hours later he came to hospital asking for help. The diagnosis was of depression, social isolation and alcohol dependence.

GUIDANCE FOR CLINICIANS

In the cases above, the presence of psychological factors fundamentally altered prognosis. Mr B used his CVC to contaminate his bloodstream with faecal material, Mrs C would repeatedly contaminate her CVC to orchestrate an admission, and Mrs D, through neglect and perhaps an unconscious wish to remain in hospital would be repeatedly admitted with line infections and eventually died prematurely. Mr E cut his line, deliberately.

Central venous catheter-associated infections are associated with significant morbidity and in some cases mortality. The long-term prognosis of patients receiving HPN may also be worsened by repeated episodes of CVC-associated sepsis especially if these episodes precipitate central venous thrombosis or hepatic dysfunction. Recurrent CVC-associated sepsis is considered by some centres in the USA as an indication for small intestinal transplantation.[8] Thus, even in cases where the patient is well trained, and the technology of PN is optimized, there are psychological factors which if not addressed can alter prognosis, in some cases very severely.

Clinicians need to be aware of the multiple psychological sequelae of HPN and of having a CVC and/or a stoma. Self-harm may be deliberate and conscious in motivation, or unconscious, and may be admitted by the patient or denied. Recommendations for clinical practice are as follows:

Access to psychological support

All GI/nutrition teams need to have ready access to a Psychological Medicine Unit, or an available and interested psychiatrist or psychologist (mental health professional) who can assess and help manage patients such as those described above. Furthermore, these teams should have access to an experienced mental health professional who can offer the team consultation and/or advice, and liaise with local hospitals/nurses to help manage the patient on HPN.

A high index of suspicion

In clinical work with HPN patients, clinicians should have a high index of suspicion especially in those patients who seem to develop multiple line infections or where the line seems disrupted or to have moved. Such patients may well fall into the categories of abnormal illness behaviour or self-harm described above. Their management will need to involve as combination of careful observation, confrontation and at the same time the maintenance of a therapeutic alliance. Such patients are often very adept at splitting members of a team, or creating splits between different professionals looking after the patient (e.g. GP, nurses, dieticians in the community and hospital professionals). Once again, the help of a mental health professional with expertise in dealing with multiple systems is essential. The additional role of alcohol abuse (and/or analgesia abuse) cannot be underestimated.

Audit/research

There is an urgent need to document the psychological profiles of patients undergoing HPN, and in particular assess the prevalence of depression, previous self-harm, alcohol and drug use and extent of social support/isolation. It will be crucial to then follow-up these patients and assess whether there are particular prognostic indicators pointing towards patients at high risk for deliberate self-harm or abnormal illness behaviour.

CONCLUSION

This paper describes some of the psychological factors affecting patients on HPN, and how both conscious and unconscious factors may impact upon their attitude to this potentially life-saving or life-prolonging treatment. Abnormal illness behaviour may affect patients with any medical condition, and patients on HPN are no exception. In extreme cases, especially where there is a background of serious psychological and/or personality disturbance, a CVC may be used as a portal of entry for potentially life-threatening infection, trauma or poisoning.

A number of cases are described, both from the literature and from the experience in our hospital, in which the CVC is used in such a self-injurious way, be it through contamination, deliberate neglect or cutting the line. Although these cases may appear unusual, they represent the most extreme manifestation of psychological pathology in an annual caseload of approximately 150 patients receiving HPN at SMH. Furthermore, whilst these cases are among the more ‘dramatic’ manifestations of deliberate self-harm in HPN patients; we hypothesize that there is a larger group of patients with less dramatic self-harm or neglect, where their prognosis may also be affected by neglect, self-harm or poor compliance secondary to low mood or psychological factors.

The long-term prognosis for HPN patients with such dramatic psychological pathology is inevitably worsened, and the recommendation is made for improving the availability of psychological assessment and treatment of HPN patients, as well as the availability of such consultations for HPN teams. Further audit and research will help elucidate these matters further, and more clearly define interventions to minimize risk and improve prognosis.

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