

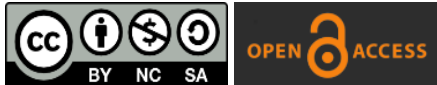
Brain Cancer and the Sense of Self: A Case Study on the Wish to Die

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Abstract

In this case report the case of Carola is presented. She has been diagnosed with brain cancer after a malignant tumor was detected in brain scans. Carola has opted out of any form of treatment for the cancer and has entered palliative care. Ambivalence toward death with an apparent lack of insight in the context of untreated brain cancer might be indicative of an altered sense of self correlating to brain alterations. Research and theorizing on how best to define “sense of self” in the context of neuroscience has led to the construct of the embodied sense of self.

Keywords: Embodied sense of self; Counseling; ESSS; Brain cancer; Brain tumor; Brain lateralization.

1. Case Report

Carola is a 75-year-old woman who lives in Lausanne, Switzerland (her case is borrowed from Ohnsorge et al., [1]). She has been diagnosed with brain cancer after a malignant tumor was detected in brain scans. The general prognosis in brain cancer remains poor even after aggressive treatment [2], and Carola’s brother died last year subsequent to detection of a tumor similar to Carola’s. He was her only surviving relative. Her husband died 7 years ago and she has no children. Carola has opted out of any form of treatment for the cancer and has entered palliative care. She has left her home and is residing in a hospice setting.

Carola is a deeply religious Catholic and embodied her faith via altruistic engagement with the lives of others in her former neighborhood, where she identified as a caretaker:

“I always worked, always have done and also always helped and . . . I always [went round] with cakes and things, and coffee, or they came to me, drinking coffee. I simply have been there for everybody all the time. Also telephonically. So

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many people call me and say: “I will miss you”—my telephone calls always, where I gave people courage and everything, and helped and such. Have always helped, whenever it’s been possible” [1].

As the quote reveals, Carola is entangling past and present in her thoughts about her own identity with respect to relationships with others in the community she has just left: her telephone still rings, but now the messages conveyed are goodbyes rather than requests; she “gave courage” and “helped” always, but the role of helper is over now. While she doesn’t directly communicate that she feels cut off, her sense of being needed is located in her former life.

Carola firmly believes in life after death and fantasizes about her husband reaching out his hand to help her cross over at the moment of dying. She accepts that the course of events is in God’s hands, and yet she frequently expresses a strong desire to die. In a one-hour interview she states five times that she is continuously praying to God to take her now. She expresses only one reason for wishing to die: she does not want to be a burden to others. Her discomfort with being dependent and unable to care for herself is linked to her loss of her lifelong role as a devoted helper:

“I always pray that I can release people, eh, that I can free them of a burden, release the others also. That I do not always have to rely on help, I want . . . My whole life, I only worked and always took care of [others] myself . . . Then after this it’s simply difficult, if you always have to have other people. That you have to be a burden . . . That I’ve never liked” [1].

As Carola indicates, the one way in which she now sees that she can be of service to others is by relieving them of the burden of caring for her. Hence, her sole means of maintaining her identity as helper is through her active wish to die. She is using it to help people in the only way she believes that she still can.

In fact, when her desire to die is no longer playing this active role of maintaining her connection to the life she has lost, it dissipates. Here the territory of ambivalence becomes complex. When asked directly if she wishes to hasten the progression of her disease, she hesitates and says “I could not tell it, because I have just no pain now. . . If I had pain now or so, then I would say: immediately. But then . . . I will have to wait” [1].

The interviewer finds this apparent about-face astonishing. Yet we can also see that Carola is producing a different answer to a different question. “Hastening the progression of the disease” implies not just dying sooner but also going through an intensification of the breakdown of her body that her body is currently experiencing, a process of dissolution that she may wish to cease when she wishes for immediate death. On some level her selfhood is witnessing in the process of physical decomposition a corresponding decomposition of the self. It is quite possible, given the firm structure of her religious beliefs, that she wishes to deny or avoid this awareness [3], [4]. She places this process outside of awareness and therefore outside the realm of desire (May, [63]): “That’s not my business. That’s God’s business” [1]. The brain is the location of Carola’s cancer and it is also the part of the body involved in the continuous creation of the fiction of a central stable self and of other stable selves surrounding us, a fiction that is not only operational in our daily lives but can be likened to the atmosphere we breathe [5]. Carola’s tumor has already altered and will continue to alter the functioning of her brain and therefore will

change her ongoing engagement with this process of self- and other-awareness. Her cognition is changing, her memory is changing, and her personality is changing in relationship to the continual impingement of the tumor [6], [7]. The ways in which her interoceptive awareness may be communicating with her consciously ongoing sense of self are at present known only to her.

When interviewed, the nurse who cares for Carola unveils an even deeper layer of information not revealed in Carola's self-presentation to the interviewer. For her nurse, Carola's frequent expressions of her wish to die feel like "set phrases" uttered in unsettling contradiction with what she senses as a "hidden fear" radiated by the energy of Carola's affect as well as the ambiguity of her laughter [1]. Most telling is the extreme discomfort Carola expresses around hygiene care for intimate parts of her body that the nurse regularly performs. These are the occasions at which she most typically expresses her wish to die as a wish to unburden others, which also may be indicative of an overwhelming sense of shame: "Well yes," she says to the nurse, "it would be better I would die now, what you have to do with me" [1].

2. Diagnosis

It seems clear that Carola could benefit from counseling, but is she suffering from a condition that can be identified within the limits of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR) (American Psychiatric Association [8])? If it were imperative that she be diagnosed with a mental condition in order to receive the benefit of counseling (which is probably not the case, since she lives in Switzerland), how would it be best to diagnose her?

The news that she has a virulent form of cancer and the subsequent separation from her home and community—especially following the recent trauma of the death of her brother, her last surviving relative—would certainly qualify as significant stressors. Her current emotional and behavioral response to the condition of facing her own death and losing her former life could therefore perhaps be interpreted as Adjustment Disorder. In order to meet the criteria for this condition, her responses would need to be either "out of proportion to the severity or intensity of the stressor, taking into account the external context and the cultural factors that might influence symptom severity and presentation," or causing "significant impairment in social, occupational, or other areas of functioning," or both [8].

Certainly, given the context, it would be hard to argue that Carola's response is disproportionate. Furthermore, her responses to her circumstances are not the primary sources of impairment in her social and occupational areas of functioning; it is primarily the processes of physical breakdown in terminal illness that are themselves the source of impairments. We would encounter the same quandary if we were to consider a DSM diagnosis involving bereavement. Carola's behavioral and emotional responses are entirely within the boundaries of what might be expected, given the circumstances, but that does not mean that they do not merit attention and care.

If I had to present a diagnostic code in order for Carola to receive benefits, I would list her condition as Adjustment Disorder, Unspecified (F43.20) [8], which would allow me to state that her symptoms are not classified; it would still, however, require me to label them as "maladaptive" as well as disproportionate to the context. Would this be a falsification?

One approach to this question considers it in terms of worldview, and this consideration of worldview also has implications for treatment that apply directly to Carola's case. The language of the DSM still locates "disorder" and "maladaptation" within the boundaries of the individual. By contrast, current research in neuropsychiatry is increasingly focused on right-brain-to-right-brain communication and interbrain synchronization and connectivity [9], [10], [11]. This developing research supports a view of individuality as a dynamically changing creative process that develops and exists between beings rather than arising as enclosed within any given person. Human being is permeated by sociality in an ongoing organically changing manner analogous to an individual's breath being permeated by the atmosphere in which she breathes [5].

Seen from this perspective, Carola's past experience of her own identity was entirely interwoven in the fabric of the community she cared for. She has lost the presence of that community. Only the disembodied voices on the telephone carry over from what once was, and even they say "we will miss you" and not "we miss you now": it is as if her former life and the death that looms were acting in concert to negate the validity of her current reality. No wonder she seems to need to negate the present as well by clinging to the notion of an afterlife in which she will once again experience union with others.

But even in hospice she is still located in a dynamic network in which her beliefs, history, physical illness and current surroundings come together and interact with what is happening for her and the others with whom she is engaging on a daily basis. There is no "maladaptive" behavior that can be isolated and identified as stemming solely from within her and directed towards an outside. Rather, there are intersubjectively experienced and expressed conditions of dissonance, loss, and confrontation that are currently presenting challenges to her historically reinforced patterns of belief, behavior and self-conceptualization.

A situation taken as a whole cannot be diagnosed or treated within DSM categories. But we encounter many situations in which distress merits care, while whatever may be considered a "proportionate" response to the stressful context is virtually undefinable. Within these shifting frameworks of belief, we can indeed offer treatment.

In 2016 an international group of 26 practitioners came together to formulate a definition of the "wish to hasten death" in cases of terminal illness, stating that it is a "reaction to suffering, in the context of a life-threatening condition, from which the patient can see no way out other than to hasten death" [12]. Rodriguez-Prat and colleagues [13] have found that fear of being a burden to others, loss of control and helplessness are among the most common reasons for the wish to hasten death in the terminally ill. While these reasons haunt Carola's thoughts, it is a hallmark of her ambivalence that she denies experiencing any wish to hasten death even as she repeatedly expresses the desire to die. A focused exploration of the meaning that this ambivalence holds for her may be of great benefit to her.

Tarbi and Meghani [14] identify ambivalence as one of the central existential conditions commonly experienced by adults in advanced stages of cancer: there can be an extreme vacillation between intense negative states and the intense relief provided by any degree of positivity that can be perceived to alleviate the despair. Exploring expressed wishes for death is not harmful to the patient when undertaken in a context of safety and trust [15] and can uncover a wide range of idiosyncratically nuanced intentions [16], whose elucidation in the process of description itself, within the context of the therapeutic relationship, can promote beneficial change [4].

Terminal illness tends to tap into awareness of a state of transience that presents a deeper level of change than the notion of transition [17]. In transition a perceived continuity carries over from one state to another, whereas transience is experienced as a condition of complete non-lastingness, a fundamental presence of discontinuity that typically corresponds to a poignant emotional state [18]. Transience is often experienced as a kind of homelessness, if home is conceived of as a metaphorical space of ontological security. In a palliative care setting, counseling can create conditions for deeper involvement that foster a sense of connection to a space connotative of being at home. For Carola this sense of involvement could bring her back to the altruism so connected with her former sense of identity, which has lost its grounding in her life. It will need to be refound and understood differently. She is in what Jaspers termed a limit situation, a place where status quo has encountered its cliff edge and business as usual is no longer possible [19].

Entering into group therapy with an existential approach could immediately afford a potential for a new kind of altruistic activity for Carola: simply by engaging with the initial acts of listening and being present and available for others, she could begin to re-experience her presence as meaningful and impactful [19]- [23]. Once a sense of trust has developed in the group, the sharing of information may progress to overcoming the avoidance of expressing negative feelings often undertaken by cancer patients as a strategy to protect others, which tends to leave them further isolated [23]. The shame Carola feels about her body and the unexpressed deep fears that her nurse suspects are present may come to light in the context of a reframing and relieving experience of universality [23].

Spiegel and Yalom [21] documented their experiences leading existentially oriented psychotherapy with a group of women diagnosed with metastatic breast cancer, describing a wide range of benefits. In a manner highly relevant to Carola's evident isolation in hospice, their group developed an intense sense of solidarity and mutual support that extended outside the sessions. Since then numerous studies and tailored approaches have addressed and documented the relevance of bringing existentially influenced group therapies to patients in palliative care [24], [25], centering on concerns such as meaning and purpose [26], [27]; Grassi et al., [28]; Breitbart et al., [29]; Saracino et al., [30]; Rodin et al., [31]; Nakamura & Kawase, [32]), dignity (Chochinov et al., [33]; Kredentser & Chochinov, [34]) and spirituality [35].

Rosa et al. [36] propose that a spectrum between existential suffering and existential health extends from isolation to connectedness. It appears that Carola's current wish for death may be functioning as a last thread to connectedness that she feels she can hold onto by at least expressing her desire for others to be relieved of the burden she feels she has become. A new kind of connection with a close community in which the dark matter of her own process of living with disease and dying could be embraced—and in which she, in turn, could offer a similar embrace—could constitute a transformational stage in her life.

3. Brain Cancer and the Sense of Self

Might ambivalence toward death with an apparent lack of insight in the context of untreated brain cancer be indicative of an altered sense of self correlating to brain alterations? Research and theorizing on how best to define “sense of self” in the context of neuroscience has led to the construct of the embodied sense of self. The Embodied Sense of Self Scale

(ESSS) has been used in a study with brain cancer patients to measure anomalies in sense of self pre- and post-surgical removal of the brain tumors. Results show that the presence of brain tumors correlates to significant alterations in sense of self and these connect to related findings on hemispheric location of brain damage and its effects on self-awareness. The ESSS, however, appears to be designed for persons with a relatively high degree of functionality, which may be a limitation. In addition, because it is a self-report scale, ESSS results are ambiguous in cases of lack of insight: the sense of self may be implicitly altered while alterations are explicitly denied. A related study on brain tumors and quality of life shows that the effects of lateralization may at times be the inverse of what is to be expected based on previous research. Other case studies graphically illustrate the extremes of personality and identity change that have occurred in cases of advanced brain cancer. While definitions, theories, and consistent brain localization of effects remain open to question, the connection between brain tumors and changes in senses of selfhood is unequivocal.

Carola is choosing to die from cancer gradually in hospice rather than treating the malignant tumor that is growing unabated in her brain. She is expressing marked ambivalence toward death: she quite frequently expresses a wish to die as soon as possible to relieve others of the burden she has become and to regain her husband and be with God in the afterlife. But when asked if she wishes, therefore, to hasten the progression of her disease, she voices a contrary desire: she wants to leave the course of the disease and the manner and moment of her death in God's hands [1].

One hypothesis is that this ambivalence may be indicative of two contradictory experiences of self-perception and belief: on the one hand, Carola presents a narrative in which she, as a stable self, will proceed unchanged to heaven. On this level she embraces and longs for death. On the other hand, it may be the case that her interoceptive awareness of radical changes in her body corresponds to some degree of underlying awareness of changes in her sense of stable selfhood, contributing to an experience of radical groundlessness—a fundamental non-lastingness or “transience” of being, as it is described in the literature [15], [17]; [18]—that the dying often have to face and that Carola may be desiring to avoid. If death means going through the process of losing herself in dying, she may be holding back or avoiding the awareness of that process even as it is already impinging on her daily existence.

Leaving aside questions of shame and burdensomeness, which also strongly impact her case, how might an understanding of what is happening physically in her brain help us to understand her current state of ambivalence, with the ultimate aim of helping to ease her distress as she approaches death? The tumor may be affecting her memory, her cognition, her affect and mood, her personality, and her sense of self itself [6], [7]. While the exact location and size of the tumor are not yet known, a general exploration of how malignant brain tumors affect the sense of self and its related psychological aspects of being may help us to prepare to work with Carola.

The backdrop for considering disruptions to a sense of self is a broad spectrum of impairments due to the cancer. Cognitive problems are almost certain to be present and affecting Carola's well-being: 80% of brain cancer cases present with some degree of neurocognitive difficulty at diagnosis (Day et al., [37]) and cognitive decline is a hallmark of the tumor's progression [38]. We know from the case report that she is no longer able to perform her own hygienic self-

care, indicating that her motor functions are already seriously restricted. She has no family left, and her lack of social support compounded with the advancement of the disease will certainly be diminishing her overall quality of life [6]. Fatigue is present in 34-82% of glioma and meningioma patients (Armstrong et al., [39]; Cheng et al., 2021; van der Linden et al., [40]), manifesting as a decline in the ability to maintain the degree of alertness necessary to process information as well as to undertake voluntary actions. Impaired memory, disturbed sleep and distress are among the most common baseline disturbances eroding quality of life in a wide range of brain cancer patients [39].

4. Sense of Self and Brain Alteration

How is the subjective experience of selfhood connected to what is happening in the brain from a neuroscientific perspective? Before we can begin to approach this question it is necessary to acknowledge that in order to look at brain processes and interpret them in relation to the sense of selfhood we must first have a working concept of what “sense of selfhood” means. This is a matter of debate.

Allowing for the integration of both first-person, phenomenological perspectives on the self and third-person accounts based on observation and neuroscientific imaging—an approach they define as both naturalistic and non-reductive—Legrand and Ruby [41] argue for a paradigm shift from looking for the brain basis for the sense of self as the complex internal representation of selfhood to considering what neuroscience can reveal when self is defined much more minimally as the experience of a subjective first-person perspective in relationship to an external world. They base this redefinition in brain activity by grounding it in the sensorimotor functions of efference (motor-driven action that has external consequences) and re-efference (the aftermath of the action as it is perceived and integrated). The argument is that this narrow view offers a way of looking at selfhood in terms of a brain process that is specific to selfhood.

Newen [42] offers a broader but not less grounded view in his definition of the embodied self, which presents self-consciousness as the result of the embodied “flow” (p. 2) of basic affective experience integrated with an intentional center (of agency, thought or perception). This integration is anchored in the body. Along with Gallagher [43], Newen gets past the thorny issue of *what* the singular entity called “self” that remains constant *is*—if it can indeed be said to exist—by proposing a pattern theory of the self. Characteristic elemental embodied processes tend to come together in certain ways in a repeated fashion. The overall pattern is flexible and can incorporate many identifiable aspects that can be seen or interpreted in different ways from different perspectives, allowing science to evolve around it. In his discussion and defense of this pattern theory, Gallagher [43] responds to Legrand and Ruby [42] directly, pointing out that there may be aspects of patterns that contribute fundamentally to the sense of selfhood without needing to be specific to it.

The Embodied Sense of Self Scale (ESSS) was developed by Asai et al. [44] on the basis of a two-component model of the sense of selfhood related to pattern theory [45]-[47]. Embodied self is proposed to consist of a minimal sense of self (composed of a sense of agency, or the feeling that one is causing one’s own actions, plus a sense of ownership of the body that one recognizes one is) and a narrative sense of self (which extends the minimal self across time). The narrative

self depends on and elaborates on the perceived continuity of the minimal self through patterns such as personality, identity, and autobiographical memory.

Working from this dual model, Asai and colleagues established three subfactors measured on the scale: agency (8 items), ownership (9 items), and narrative (8 items). The strategy they employed in their creation of the scale was to structure the self-report form around unusual experiences of the sense of selfhood, given that the sense of self often remains implicit and does not intrude into awareness until it is no longer functioning as usual [48]-[51], [64]. As a result, the authors assert that the scale can also serve as a useful measure of anomalous experiences of selfhood: the lower the score, the more unremarkable the embodied sense of self; the higher, the more disrupted.

There is evidence that this conceptualization of the sense of selfhood can be linked to effects of brain damage that clearly relate to ownership, agency and narrativity. Lesions in the right insular cortex, for example, have been associated with patients disowning the limbs on the left side of their body as well as losing awareness of the motions of those limbs (thereby also losing a sense of agency with respect to the movement) [52]. In terms of the narrative sense of self, Nochi [53] reported that persons who had suffered traumatic brain injury found it difficult to account for their current condition and form a sense of what they were capable of doing in the present—a lack of awareness that points to both disrupted narrative continuity and a confused sense of agency.

However, Medved & Brockmeier [54] found that patients with anterograde memory impairments that had occurred one year previously had not lost their firm sense of continuity with their former senses of selfhood held prior to the injury, despite the fact that their present lack of autobiographical memory skills left them seriously impaired in daily life. In fascinating ways, these patients developed work-around narrative techniques by which they imported memories from the past or appropriated others' memories in order to cover over their current memory gaps. In other words, their narrative sense of self was indeed disrupted in one sense, but their brains were working out compensatory measures outside of their conscious awareness. Their insistence on the continuity of selfhood was even stronger in the midst of their struggles with memory loss.

As has been stated above, Asai and colleagues focused their scale on anomalous experiences of self because the normally functioning sense of self tends to remain implicit until it emerges into awareness due to its functioning having been disturbed in some way. But as we can see in the cases above, the effects of some serious disruptions in the sense of ownership, agency and narrativity (e.g. as a result of memory loss) can also remain outside conscious awareness.

This points to an important weakness in the use of ESSS and the interpretation of its results. As the ESSS is a subjective self-report scale, it can only speak to whatever information is reaching the person's awareness. In some situations the information reaching conscious awareness may be at direct odds with what is the case (as in the instances of patients who disown limbs). In other words, the implicit sense of self may have indeed changed, but we have no way of knowing this through self-report if the explicit sense of self does not reflect the change. This disjunction, where in evidence,

would be an important source of information about the sense of selfhood that at the very least would need to be integrated with ESSS results which, due to the patient's lack of insight, could appear normal. Carola, for example, does not demonstrate any insight into the contradiction between her two attitudes toward death. This may be an indicator of an important gap in her awareness, which, as a very general possibility, may relate to ongoing right-hemispheric impairment [55]. This supposition is based on the fact that conditions of anosognosia, in which patients are unaware of suffering from diseases or impairments, have been demonstrably linked to damages in the right hemisphere [56].

The sense of awareness is not included as a main component in the ESSS and indeed subjective self-report may not be able to adequately capture disruptions to the sense of self that may be registering on an implicit level but not emerging into conscious awareness. Certainly, however, explicit and implicit self-awareness are in dialogue throughout our daily lives and may be elemental if not specific to the sense of selfhood.

5. Embodied Sense of Self and Brain Cancer

Hiromitsu et al. [55] used the ESSS to measure the subjective sense of self of brain cancer patients before and after brain surgery. Overall, the pre-surgery brain cancer patients' scores were higher than those of controls and the post-surgery scores were lower, as could be expected: patients with tumors, in other words, had more anomalous subjective senses of self, and their post-surgery scores showed a lessening of those anomalies.

Patients with left hemispheric lesions scored higher on the ESSS than those with right-brain lesions. Here there is an intersection of two ways of interpreting these sets of findings in terms of brain laterality. With respect to the left brain and the embodied sense of self, previous studies have demonstrated close relationships. Left-hemispheric lesions have been shown to correspond to problems with self-initiated movement in apraxic patients [57] and left-hemispheric activation has been demonstrated in persons viewing simulations of motor activities [58]; both of these studies point to the left-brain connection to the agency component of embodied sense of self. The sensation of limb ownership has been related to left brain activity [58], corresponding to the ownership component of the model, while the functioning of autobiographical memory has been linked to the left hemisphere [59], demonstrating a relationship to narrativity.

Concurrently, from the perspective of right-brain functioning, the lower scores (less anomaly) among patients with right-brain tumors are also consistent with the findings mentioned above that point to an important role of the right hemisphere in self-awareness [55]. Dysfunctions in the right hemisphere may relate to a selective loss of awareness that blinds the subject to other dysfunctions. Hence, the right-brain-damaged patients could have been self-reporting less anomalous senses of self due to lack of insight into their anomalous senses of self.

In addition, in the Hiromitsu et al. study [54] disturbances in episodic memory were related to dysfunctions in both the narrative sense of self and the sense of ownership, perhaps indicating the closeness of the relationship between the minimal self and its extension in time. Disruptions in the sense of ownership can also be related to findings that persons suffering from traumatic brain injury may begin to perceive their body as foreign or alien, which can be highly troubling

as well as a source of dysfunction in everyday life [60]. In this context we might consider exploring with Carola how she is experiencing her conscious relationship to her body, especially given the intersection of shame and the sense of being a burden to others that she is locating in her physicality [1].

Would it be useful to administer the ESSS to Carola? A review of the items on the scale seems to indicate that they assume a level of functionality that she no longer has, so the questions may not be relevant to her state. In addition, reading the items on the scale with Carola's case in mind helps to illuminate the extent to which whatever anomalies in the sense of self she may be experiencing are under the radar of her conscious awareness.

One of the items that factors strongly for ownership, for example, reads "sometimes my body feels jerky like a robot"; another: "when out walking, I rarely notice my reflection in mirrors or shop windows." Carola is probably bedridden at this time, as she is in hospice care and requires the assistance of a nurse to perform basic functions. The items therefore have little relevance to her situation.

Examples of narrativity items on the scale are "sometimes I feel I no longer know my own personality" and "it seems like the person I was in the past and the person I am today are completely different." Here we can recognize from the case that Carola does not present any doubts of this kind; on the contrary, she seems to be struggling with her strong attachment to her sense of identity now that she can no longer embody it in the way she used to.

Finally, examples of two agency items are "I tend to drop things when I carry things around" and "I lose things without even being aware that they are lost" (all quotations are from Asai et al., [44]). Again, we can see that the scale assumes a level of functionality and embeddedness in a privately maintained sphere that are not applicable here, as Carola is in hospice where her entire existence has become semi-public and permeated with assistance.

So what can we learn about how to address Carola's case in the context of this literature on cancer and the embodied sense of self? Perhaps the most significant finding at present is the suggestion that damage to right-brain functionality may be contributing to her distress.

A study conducted by Salo et al. [61] found notable differences between pre-operative quality of life in patients with left-brain and right-brain tumors: the quality of life reported by patients with right-brain tumors was significantly worse. Salo and colleagues were bemused by this unexpected finding, as the actual impairment caused by the left-brain tumors was in most cases more debilitating and severe. They concluded that the difference came down to subjective perception and that those with left-brain impairment were less likely to notice or register the extent of the damages they were suffering due to the tumor. In other words, left-brain damage corresponded to greater lack of insight. Note that this study directly reverses suppositions this paper has just made about the right brain's connection to self-awareness.

To further trouble the waters, Anderson-Shaw et al. [62] complicate and question how to definitively establish what the sense of selfhood might be in the context of its loss due to the progression of brain cancer. Yet, focusing in on the question of “identity,” they present three case studies that describe quite plainly and graphically how the personalities of the people being treated for brain cancer were dramatically altered by paranoia, hallucinations, and cognitive impairment. Next to and perhaps residing on a deeper level than the dramatic surface effects of the manifested disorders were the accounts of family members watching as core familiar aspects of the person—aspects previously known as essential to their being—disappeared or changed. In all three of these cases the patients had undergone surgery to remove the tumor and followed up with radiation or chemotherapy.

Carola is choosing not to pursue the aggressive treatments currently available to keep patients alive for as long as possible and is letting go of her life, but not without difficulty. Hers is an ambiguous case, and existing definitions, theories and research on brain localization of effects do not offer precise guidance that can be applied to working with her psychotherapeutically. What the research does clearly demonstrate is an unequivocal connection between brain cancer and alterations in the sense of selfhood.

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