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Hypnosis in Cancer Patients: Can We Do Better?

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1. Introduction

There is an official history of hypnotism: very often it begins with the Scottish surgeon James Braid (1795-1860) who was one of the first physicians to have used this word in 1843. Instead of using the standard magnetic induction popularized by magnetism/mesmerism¹, he proposed his subjects to stare steadily at a shiny object to enter a trance. He tested his method to anesthetize his patients during surgeries (Braid, 1843). The practice of hypnosis, using deliberate techniques to help focus attention, is recent, but trance states have always been part of the human experience. Many kinds of trance phenomena are observed in shamanism, fakirism, witchcraft, and religion but also in psychopathology. After remaining an inglorious stage practice in western countries, hypnosis has begun to gain relevance in

¹There are slight differences between “mesmerism” and “animal magnetism”. Here the label “mesmerism” is used as it is more encountered in the USA. In this country as well as in England, a secondary current emerged among “magnetizers” in order to remove all practices that they thought irrelevant or that did not seem to contribute to the cure. However, both derive from the practice first developed by Anton Mesmer (1734-1815) that he himself called “animal magnetism”. For our topic, it is referred here to the wide research on “magnetism” that has started later in 1784 with the Marquis de Puységur and lasted for more than one century mostly in France and England. Studies and practices focused on several main points:

- the reproduction of (alleged) results obtained under magnetic trance (cures but also various phenomena such as blind reading, hyperscience, clear-sightedness...)
- the definition of the medium (magnetic fluid, suggestion...) causing both trance and phenomena
- new concepts about the human psyche that these phenomena (if agreed) made necessary.

The controversy that opposed top physicians, scientists and philosophers, ended at the beginning of the 20th along with the onset of psychoanalysis. All the very interesting results (although discussed) have suddenly been swept off. The opponents of magnetism argued that alleged phenomena were either caused by gullible practitioners who were abused by their hysterical patients, or originated in manipulations performed by charlatans (Meheust, 1999). Meanwhile, the emerging science of hypnosis has also been put aside as Freud claimed that results obtained by hypnosis did not last as long as those gained in full consciousness by psychoanalysis... While this field of experimentation was abandoned in Europe, it has regained interest after 1950 both in the USA and USSR with parapsychology, in particular thanks to the financial support of military agencies: for these latter, new means to obtain information or exert an influence were sought. But for scientists, “animal magnetism” is nowadays considered an irrelevant matter of interest, perhaps too rapidly.

medicine as has proven a real efficiency in several domains; thanks to Milton Erickson (1901-1980), it has earned its place as a therapeutic approach in psychology.

Hypnosis is still at the margins of the scientific mainstream. After the eviction of mesmerism and many related phenomena from the list of tolerated experimental fields (Meheust, 1999), some effort is still required to limit the description of emergences under trance to something acceptable and analyzable. Psychology and medicine seem to have satisfied these criteria in their use of hypnosis as sought goals are largely agreed. Although purposes vary widely, their experimental fields overlap because of the very nature of hypnosis. They both use hypnosis for the benefit of patients. They use some of the same scientific methods, including functional imagery and clinical trials or surveys whose design seems sufficient to assure confidence in the conclusions. In relation to psychosomatic troubles, medicine and psychology share a no man's land where medical treatment appears insufficient and where patient support is necessary (for example pain management). The use of hypnosis consists of mild practices that, according to psychologists, are respectful of individuals' will: these range from relaxation techniques coupled with guided imagery and/or suggestions to more complex tailored hypnosis where trance can be deeper. Self hypnosis belongs to this group of techniques, as it is often encountered in educational/behavioral patient management. No discussion will question here the validity of such a grouping of techniques.

Among medical fields, oncology is a particularly good domain for the use of hypnosis, because cancer is typical of the difficult diseases where medicine fails. This chapter reports the different trials and investigations that today build the consensus on which the routine practice of hypnosis thrives. After hoping for a prognostic impact of hypnosis on cancer itself, investigations have changed their target and now focus on alleviating side-effects of the disease and/or its treatment. The issues studied concern immunity and treatment response. Surveys concentrate on patients' well-being as well as more specialized topics such as anxiety, depression, fatigue, and pain. Very specialized issues, such as hot flushes after cancer treatment, are also addressed.

2. The impact of hypnosis on cancer itself

2.1 Survival outcomes

The first trial investigating survival as a main endpoint² was reported by Newton (1983). Unfortunately, the design was inappropriate, as patients were not randomized between the treatment conditions (with or without hypnosis). Also, patients who received less than three one-hour weekly hypnosis sessions were compared to those receiving at least three. As expected, life was shorter for the patients dying before they could receive at least 3 sessions. Despite these weaknesses, this investigation launched a long series of prospective research on psychosocial interventions, at a rate of about one per year since 1985 (Kwiatkowski, 2009). Another trial tested hypnosis as the main psychosocial intervention in patients diagnosed with melanoma (Walker, 2000), but it contained the same kind of methodological flaws, and thus the slight difference in favor of hypnosis could not be trusted.

²Endpoint is often used in this chapter because its meaning differs slightly from the words goal and purpose. In clinical research, endpoint is the measurable goal (ex. goal = to live longer; endpoint = survival time – goal = to live better; endpoint = score with the quality of life questionnaire)

Four other randomized controlled trials investigated the impact on survival of educational supportive interventions (group therapy) including self-hypnosis to help patients handle pain or anxiety (Spiegel, 1989; Goodwin, 2001; Kissane, 2007; Spiegel, 2007). Intervention consisted of weekly 90 minutes group sessions where women were encouraged to share and confront their problems, strengthen their relationships, discuss strategies for coping with cancer and find enhanced meaning in their lives. But no suggestion was given to let them believe the intervention could increase their odds of survival. Patients were asked to attend sessions during one year in parallel with standard cancer treatments. The first trial that included only 86 patients with metastatic breast carcinoma, was significant, reducing by 24% the risk of death (Spiegel, 1989) while median survival time after randomization was 17 months longer in the intervention group. The three further trials, performed with a similar design to confirm this outcome, included respectively 235, 227 and 122 women. Unfortunately, they did not show any prognostic advantage for the intervention.

2.2 Impact on the response to chemotherapy

The response to chemotherapy is an interesting endpoint because it usually correlates to overall survival: the better the tumor regresses, the longer the patient survives (with or without relapse/metastasis). Walker et al. (1998, 1999) tested a protocol including relaxation training and guided imagery. Before the first course of chemotherapy, patients randomized to the test group were taught a relaxation method that consisted of “progressive muscular and cue-controlled relaxation” (Hutchings, 1980). The patients were given audiotapes with relaxation instructions and asked to look at a portfolio of cartoons to help them imagine their immune cells destroying the cancer. They also kept a diary to record their daily practice duration. Response to treatment and personal practice was evaluated at the end of the chemotherapy. No significant difference in tumor regression was observed between the two treatment conditions, although a weak association was found between the vividness of imagery and clinical tumor response.

2.3 Enhancement of immunity

Immune cells, mainly lymphoid natural killer (NK) cells, play a major role in tumor cell lysis, and provoking an immune response is useful in cancer treatment. Immunity is probably responsible for the spontaneous complete remissions without treatment observed in melanoma, and partial histopathological remissions in breast cancer (Horii, 2005). In addition, metastasis are often discovered but no primitive tumor can be identified: this suggests that the immune system destroyed the initial tumor cells.

Immunity can be thought of as another self, connecting the psychic and physical selves, and capable of learning and memory (i.e. adaptation). For psychologists, a special property of this immune self is that it can be conditioned (Ader, 1993)³, which makes it a target of choice

³Ader's experiment consisted of the combination of an unconditional immune stimulus (the delivery of a dose of Cyclosporin) with a neutral stimulus (ex. a colored light, a bell or some food) and the repetition of their presentation together. Each time after the Cyclosporin infusion, blood was sampled and some immune factors measured: the results showed the expected immune drop. After a certain number of iterations, only the neutral stimulus was given, but surprisingly, there was a similar drop in immune markers without the use of any drug. Immunity can thus be conditioned.

for hypnosis. Hypnosis has already demonstrated a real efficiency against auto-immune disease, including allergy and asthma (Hackman, 2000; Langewitz, 2005) with a significant decrease of symptoms for patients trained for self-hypnosis.

However, the immune system is very complex and many different parameters (white cell count, cytotoxic potential of NK, cytokines, hormones, cell receptors...) need to be taken into account if one wants to discover significant effects. This multiplicity of parameters increases the risk of false positive study outcomes. The immune system is also affected by variations in gene expression, and this expression can itself be altered by hypnosis (Rossi, 2002). Data demonstrate the high level of interaction between biological and psychological functions, and it is noteworthy that influences are bi-directional (Kiecolt-Glaser, 1999; Temoshok, 2002).

Behavior is another lever that can be used to enhance immunity. As immunity is very dependent on circadian rhythms (mainly the activity-sleep cycle) and on the use of psychotropic substances (tobacco, alcohol, hypnotics, drugs...), any behavioral change that aims to reduce addiction or ameliorate circadian rhythms can benefit immunity. Conversely, this probably explains why chronic depression almost doubles cancer risk in the elderly (Penninx, 1998) as it generally disturbs sleep. Many kinds of psychosocial intervention targeting behavior, such as group relaxation training, meditation, are able to influence immunity. Since the immune system appears weak in cancer patients (since mutated cells avoid cellular immunity), psychosocial approaches can be proposed to remedy this deficiency: hypnosis stands in good place among them.

A first trial testing a psychiatric intervention (including relaxation training but without hypnosis) involved patients with malignant melanoma (Fawzy, 1990). Affective changes related to the intervention were correlated to NK levels. Bakke and col. (2002) tested longitudinally relaxation plus guided imagery in stage I-II breast cancer patients. After eight weeks of training, no change in NK cytotoxicity was observed, but the NK lymphocyte fraction increased in parallel to improvements in mood. These results were not sustained after a 3-month follow-up. In 2008, Lengacher et al. performed a pilot study using the same pretest-posttest design in the same kind of population (28 breast cancer patients aged 25 to 75 years). NK-cell cytotoxicity was significantly improved four weeks post-surgery. Both trials, although of limited sample size, suggest that hypnosis can positively impact the immune system. Emotions/mood seemed more correlated to immune changes than coping attitudes were: this might be of importance in defining the strategies for suggestions during hypnosis sessions.

3. Hypnosis and patients' well-being

As the trials focusing on overall survival turned out negative, new goals for hypnosis have been proposed. The main issues now addressed include quality of life, mood, depression, anxiety, and of course pain. We review these topics hereafter.

3.1 Quality of life

Quality of life (QOL) is an accurately standardized concept developed over the past 3 or 4 decades. QOL reflects a great variety of parameters among which cancer status, treatments

toxicities⁴, physical and psychosocial dimensions, sexual functioning and even financial difficulties. Validated self-questionnaires such as QLQ-C30 (Aaronson, 1993) or SF36 (Wade, 1992) enable a good evaluation of patients' QOL in both curative or palliative situations except when the disease becomes too severe and end of life is expected. In the latter, specialized questionnaires are nowadays available (MV-QOLI (Byock, 1998), Qual-E (Steinhauser, 2002)). In palliative situations, QOL is sometimes chosen as surrogate endpoint for survival (Methy, 2010). However, QOL questionnaires find some limitations in childhood (Payot, 2011), especially with the youngest patients who cannot of course fill out questionnaires and with palliative patients who sometimes need the help of a relative or of a nurse to answer the questions or write the answers.

Very interesting research has been performed by Liossi and White (2001) on the impact of tailored hypnosis sessions on QOL among 50 terminally ill cancer patients. Intervention consisted of four 30 minutes weekly personal hypnosis sessions and it was compared to a cognitive-existential support given at the same rhythm. Suggestions were most often made in order to help patient manage his predominant symptoms but ego-strengthening suggestions were also used, either general or specific. Patients were asked to fill out QOL questionnaires (the Rotterdam Symptom Checklist (DeHaes, 1990) and the HADS (Zigmond, 1983)) before and after each session. The protocol duration was four weeks. Hypnosis demonstrated significant superiority over cognitive-existential management, improving QOL scores and reducing depression and anxiety. Other trials included QOL as secondary endpoint (Spiegel, 1989, 2007; Goodwin, 2001), and similar benefits in QOL were reported. Although QOL is a general and easy to use index, too few trials have focused on it. This endpoint should receive more attention in further research.

3.2 Depression and anxiety

Sporadic depression moderately increases (by 20%) cancer risk (Dalton, 2002), while chronic depression seems to have an even greater impact on this risk (Penninx, 1998). Conversely, cancer favors depression, as almost 50% of patients will face this mood disorder during their treatment or in the following years (Derogatis, 1983; Morasso, 2001; Harter, 2001). Depression causes a lot of personal suffering and should be treated for that sole reason. Depression has also been suggested to shorten survival because it reduces treatment compliance, but also because it increases the suicide rate (Reich, 2007). Another reason to manage depression in cancer patients is that this symptom correlates to poor immune response (Lutgendorf, 2008; Steel, 2007) and worse prognosis (Watson, 1999; Hjerl, 2003). This makes depression a major target for psychosocial intervention (Spiegel, 2003).

In the previously cited trials testing the impact on survival of a cognitive-behavioral therapy including self-hypnosis, all authors reported a significant positive impact of this intervention on depression and anxiety among breast cancer patients. In terminally ill cancer patients, Liossi (2001) obtained similar improvements. As cancer survivors may also experience depression, Elkins et al. (2008) performed a trial testing the impact of 5 weekly sessions of hypnosis plus self-hypnosis training, and observed a significant decrease in anxiety and depression scores in the treatment group.

⁴ Chemotherapy, radiotherapy and even hormonotherapy can induce various side-effects: haematological toxicities (mainly destruction of leucocytes), fatigue, nausea, vomiting, loss of appetite, hot-flushes, hair loss, skin syndrome, paresthesia...

Overall, hypnosis appears to be a good alternative to conventional psychotherapy against depression (Alladin, 2007). Very few other non-pharmacologic approaches reach its efficacy, although meditation plus yoga showed remission rates comparable to those obtained with a combination antidepressants and psychotherapy (Butler, 2008; Kocsis, 2000). This conclusion is not surprising, as meditation is another means to alter consciousness and obtain a trance. These approaches should thus be tested in cancer patients, where the incidence of depression is very high.

3.3 Pain management

Milton Erickson (1959) was the first author to report the efficacy of hypnosis against pain in cancer patients. Pain should not be considered an isolated symptom of the disease or its treatment. Often, pain has a psychosocial dimension in our culture that echoes both social loneliness and personal distress (Zaza, 2000). It therefore requires the intervention of skilled psychologists. Acute pain should be considered separately as it is often a consequence of surgery and may be treated efficiently with analgesic drugs. Two domains are available to hypnosis, as analgesic treatment may expose patients to severe side-effects (for example respiratory complications):

- expected pain during invasive medical procedures
- chronic pain, especially during palliative treatment.

Several trials have demonstrated the utility of hypnosis to counterbalance anticipated aches by children undergoing painful medical procedures such as lumbar puncture or bone marrow aspiration. Hypnotic techniques (guided imagery, direct or indirect suggestions) applied during medical procedures appeared more efficient than behavioral techniques (cognitive-behavioral training, distraction) to reduce fear, anxiety and pain during procedures (Zelter, 1982; Katz, 1987; Smith, 1996; Lioffi, 1999). In these studies, patients age ranged from 3 to 15 and sample size of the trials was around 30. In children, the magnitude of the result depends on hypnotizability of these young patients, and switching to self-hypnosis is less efficient than hypnosis induced by a therapist (Hawkins, 1998; Smith, 1996). Butler (2005) tested an interesting hypnosis strategy against pediatric pain when he trained children as well as their parents, observing a significant reduction of pain, procedural time and thus overall costs thanks to hypnosis. In adults, trials addressing this issue are scarce. Montgomery (2002) successfully tested hypnosis to reduce pain and distress in women undergoing breast biopsy. This shows that such an approach should be employed more frequently, instead of assuming that adults are able to manage the transient pain induced by medical procedures, or that short-term pain does not matter.

Chronic pains offer a different context for hypnosis. Cancer pain is usually caused by the tumor invasion or its pressure on nerves. Medical, surgical and radiological treatment of lesions are used to stop the disease and this often controls suffering directly, even if the short-term complementary use of analgesics may be useful. When medical management is not sufficient to durably prevent pain, complementary therapy is necessary, in order to avoid side-effects of long-term analgesic use (Deng, 2005) and frequent depression symptoms associated with both pain and analgesics. Pain complaints also significantly increase the burden for caregivers, whether relatives or professionals.

Self-hypnosis training plus group therapy was found to significantly reduce pain in women with metastatic breast cancer in the previously described trial of Spiegel et al. (Spiegel, 1983). A same strategy with breast cancer patients was tested over a four month period (Butler, 2009): it significantly reduced chronic pain intensity over the period but not the frequency of pain episodes or the amount of constant pain. Syrjala (1992) confirmed some of these outcomes in a trial including 94 male or female adult patients diagnosed with leukemia, myelodysplasia or lymphoma, and suffering from persistent oral mucositis pain following bone marrow transplantation. Before hospitalization, training material (information on relaxation, deep breathing and audio-tapes) was presented through one-to-one interaction in two sessions. During hospitalization, patients were seen twice a week, one session including in-vivo relaxation and imagery. Patients were asked to practice daily. Patients of the control group received the standard treatment and an other control group was offered therapist support. After 5 weeks, pain was significantly alleviated by hypnosis. This trial tested also, in adjunction to hypnosis, a cognitive-behavioral coping skills training. This training showed no supplementary effect on pain measures.

Controlled trial assessing the impact of hypnosis on chronic pain over the long run are lacking: therapeutic strategies covering longer intervals should be addressed in further studies.

3.4 Treatment side-effects

Typically, to meet treatment goals, antitumor drugs have to be toxic, surgery invasive and radiation aggressive. Targeted treatments such as monoclonal antibodies may not change this situation. Aside from pain, side-effects comprise a large set of symptoms: nausea, vomiting, fatigue, and neuropathy, and psychological disturbances more or less related to these symptoms. They may lower the patient's therapeutic alliance with his physician and/or require dose reductions or delayed schedules, and thus limit the efficacy of treatment. Because these symptoms often appear before the treatment begins, it has been suggested that hypnosis could significantly remedy this problem.

Nausea and vomiting are some of the most frequently encountered side-effects of chemotherapy. A universally effective anti-emetic medication remains elusive (Koeller, 2002), although important advances have been made. Complementary approaches are therefore interesting, especially for anticipatory symptoms. Three trials tested this question using self-hypnosis (Syrjala, 1992; Jacknow, 1994; Hawkins, 1995) that patients were supposed to use before and during treatments, while the other one proposed tailored individual hypnosis (Zelter, 1991) including imaginative fantasy with suggestions (for example, holding or cuddling a pet). All these trials concerned pediatric cancer patients except for Syrjala (1992). Because of the small sample size of the four trials, a meta-analysis was conducted by Richardson (2007) who concluded that hypnotherapy significantly lessened symptoms. Overall, hypnosis was twice more efficient against nausea and/or vomiting symptoms than therapist contact and five times more than cognitive-behavioral management. Trials including pediatric patients contributed the most to the effect size but the other one including adults demonstrated no difference between intervention conditions.

Fatigue is a frequent side-effect of cancer treatments, although the disease itself can concurrently be responsible for it. In one trial of radiotherapy, this symptom was stabilized

by cognitive-behavioral therapy plus hypnosis, while the control group showed a linear increase of fatigue scores over the same period (Montgomery, 2009).

Hot-flushes in breast cancer patients are an underestimated symptom that affects almost 80% of the women undergoing chemotherapy and 70% of those treated by hormone therapy (Carpenter, 2001). It also concerns female patients and survivors of other cancer locations and is often associated with other physical symptoms including headaches, palpitations, or insomnia, and psychological difficulties such as irritation, or a sense of loss of control. Elkins (2008) included 60 females in remission of their breast cancer who suffered from frequent and/or intense hot-flushes. The five weekly sessions of hypnosis defined in the trial protocol consisted of "*mental imagery and suggestions for relaxation; mental imagery for coolness; deepening hypnosis and dissociation from hot flashes; positive suggestions and imagery for the future*". Results showed that hot-flushes frequency could be largely reduced by hypnosis (by 68%) and that this reduction had a significant impact on overall quality of life and sleep.

3.5 Management of digestive symptoms

The digestive system and the treatment of related diseases and symptoms is a particular medical domain where hypnosis and psychosocial intervention can demonstrate their interest and at the same time shed new light on the interactions between mind and body. Thanks to Gershon's findings (1965, 1998) on the importance of what he called "the second brain", we now know that one of the most influential hormones on mood and depression (serotonin) is mainly secreted by enteric neurons, and that these neurons together form a network capable of autonomous responses. The digestive system is known to respond to psychological stress and emotions (Jones, 2006) although gastric troubles as ulcers have recently disappeared from the list of the psychosomatic diseases⁵. In 2008, Charioni et al. reviewed the literature testing the efficacy of hypnosis in the modulation of upper digestive motor and secretory function (more than 20 published reports). This did not take into account previously reported management against nausea and vomiting. Studies investigating the secretory function are not easy. They need nasogastric intubations in order to collect gastric secretion and sampling has to be made before and after the hypnosis intervention. Studies focusing on the gastric motor function needs less invasive procedures: real-time ultrasonography can measure with a good reliability gastric emptying rate using the diameter variation of the gastric antrum in the sagittal plane passing through the aorta. Suggestions must fit targeted functions: to induce an increase of acid secretions in healthy volunteers, they are asked to visualize and eat the most delicious meal possible, while sensory aspects of the eating process, including food appearance, aroma, texture and taste, are explored and reinforced by hypnotist. On the opposite, the averting-food strategy uses intense imagery to divert one's attention from eating. Imagery may concern lying on a beach, watching a sunset, or meeting a friend in a nice environment. To accelerate gastric motility, water flowing in a river or in a waterfall can be used; suggesting warmth in one hand and placing it over the epigastrium can associate suggestion of improved well being and gastric function mediated by the warmth of the hand.

⁵ Most often, peptic ulcers are caused by helicobacter pylori infection of the stomach and/or the use of NSAIDs, but about 20% of cases seem not related to either risk factor, and psychological factors are still suspected for them. Also, it is not impossible that psychological stress may alter gastric metabolism and thus favor the proliferation of the bacteria.

Reported investigations confirmed significant effects of hypnosis. The authors concluded that *"hypnosis delivered in a single session by an expert therapist has been shown capable of modulating gastric secretion and accelerating gastric emptying in healthy volunteers. In addition, hypnosis has improved gastric emptying and epigastric sensations in severe functional dyspepsia. Small bowel transit may also be influenced by hypnosis"* (Charioni, 2008 p.6282) As the delay of resumption of intestinal transit is of major importance in colorectal cancer surgery, hypnosis may be useful to reduce this delay and facilitate recovery. This field of research remains unexplored.

4. Conclusion

Numerous valuable works have been performed to test the use of hypnosis in oncology. Most of the results are encouraging and often durable: despite no definitive effect on the cancer prognosis itself has been objectivized, hypnosis has demonstrated its utility in many aspects of patient's well-being. The methodology used in these cross-sectional studies has largely improved over the past decades (Moyer, 2009), although some authors suggested that hypnotic protocols should be more accurately defined (Wild, 2004). Most published investigations were based on solution-oriented strategies: hypnosis was used to remedy one particular problem (pain, side-effects, hot flushes...). On the other hand, trials with more global goals (depression, quality of life) included hypnosis as a complementary method within a more general cognitive-educational approach. In fact, aside from a study of terminally ill cancer patients (Liossi, 2001), most studies used hypnosis in a very limited scope and/or as one of many psychological tools. Self-hypnosis has been used more often, and is usually taught during group sessions. This is regrettable, as outcomes seem better when sessions are adapted to the patient's needs and desires (Syrjala, 1995) and only individual sessions enable such tailoring. Similarly, relaxation plus guided imagery represents only a small part of the various hypnosis techniques. Other techniques only available with tailored hypnosis enable the management of deeper psychological difficulties, and their resolution could result in a stronger effect on the cancer itself.

Trials performed to test the effect of hypnosis on gastric system were more often done within personal sessions, but for experimental reasons, their goal was limited to localized somatic objectives. Therefore, no study really investigated with a correct methodology the impact of hypnosis on overall survival in cancer patients.

Hypnosis remains an under-exploited therapy that has not revealed its full capacities against cancer. Although medical painful routine procedures and treatments side-effects are valuable targets for short interventions, researchers should be more audacious in the determination of goals. There are large domains that remain unexplored (immunity, genetics) and investigations in these domains could very well help understand how psyche interacts with soma (and vice-versa). Biological research always needs an accurate definition of goals, and parameters that objectivize changes in these goals. This does not imply that associated hypnotic protocols should also be reduced to a single induction type and/or a limited suggestions panel. On the other hand, when a person is taught self-hypnosis within a larger set of tailored hypnosis sessions, it provides him new skills to handle personally his pathology and/or other life problems. In such a strategy, the physical symptom could be considered as the starting point of an evolutive mental process that could benefit the whole personality of the patient. *"For clinician, hypnosis is an opportunity to be inventive, spontaneous*

and playful and to build a stronger therapeutic relationship with a patient while providing symptom relief” (Liossi, 2006, p.55).

Hypnotisability, or susceptibility to hypnosis, is often supposed to limit the efficacy of hypnosis (Smith, 1996; Hawkins, 1998; Butler, 2009). Although Erickson claimed that 100% of normal people can be hypnotized and that most unsuccessful protocol failed because a too short time is reserved for the induction (Erickson, 1980; 1982), some studies have questioned if the power of suggestions could vary with the subject's sensitivity to hypnotic induction. This question seems to have been solved thanks to Raz's experiment with the stroop test⁶ where he demonstrated that highly hypnotisable subjects were more likely to short-circuit neuronal networks managing conflicts than less hypnotisable subjects (Raz, 2005). According to a large meta-analysis of 57 controlled trials testing hypnosis (Flammer, 2003), the hypnotic susceptibility was responsible for about 20% of treatment outcomes. This percentage is not negligible but this means that 80% of hypnosis capacities depend on other parameters: this is a reassuring perspective. To our mind, hypnotisability should be tested if a rather fixed hypnotic protocol is used as sole intervention. With face-to-face tailored inductions, the hypnotist can adapt his suggestions to his subject's characteristics and generally obtain the trance depth or the receptivity he thinks necessary.

As hypnosis requires only a few days training from physicians or nurses that want to use it in specialized contexts, some assume that this technique is rather simple and does not deserve any more effort and learning. Also, because psychological formation of physicians and nurses is rather limited, this can prevent them from engaging a deeper dialog with their patients and incite them to limit their support to what seems sufficient for their medical purpose. In such a situation, well defined and reduced hypnotic procedures may be felt protective: it holds off the threat of crisis that they could not keep under control. The separation between psychology and medicine raises another type of difficulty. For psychologists, symptoms management may represent a minor target compared to patients' psychic well-being and evolution; but they can feel limited if they have to evaluate a physical symptom or make a decision about it. It seems thus important that research teams include both types of practitioners, the physicians defining the primary endpoint (necessarily restricted if medical) and the psychologists/hypnotists the hypnotic strategy (as large as they wish, that is adaptable to patient's personality and needs) and possible secondary endpoints.

Performed by skilled practitioners, hypnosis has a great potential mostly unexplored in oncology, especially as cancer represents for patients a major threat for life and since many patients are left without efficient medical solution. The consequences of this disease are so extensive that it exhausts psychological resources of individuals, and very often drives them to depression. Hypnosis has proven to be one of the most efficient psychological tools. It can contribute more rapidly than other psychosocial managements to biological changes. It does not expose patients to toxicities or side-effects. It can be delivered at very low expense to patients of almost any age. Hence, the limiting factor for research today is not means but ideas and priorities. When oncologists' priority was the short-term survival, there was no

⁶The Stroop test presents the words red, blue, green and yellow in colored capital letters. The subject has to press a button identifying the real color of the letters. The difficulty is that sometimes the word RED is colored blue. Or the word YELLOW is colored green.

time left for psychological considerations. Nowadays, cancer often becomes a chronic disease (palliative treatments may last years). In curative situations, invasive surgeries have non negligible consequences (body image...) while complete remissions never totally discard the threat of a relapse: both situations considerably impact survivors' psyche. There is therefore, facing cancer, a large place for psychosocial interventions and thus for hypnosis.

As psychological risk factors of cancer are still under debate (depression, life events, coping styles...), research concerning hypnosis in cancer patients could very well bring new evidence about them too. Conversely, because it is easier to demonstrate changes at a biological level than at a psychological one, such research could help discriminate the best psychotherapeutic approaches from the others and give arguments to psychologists for a better integration into medicine and overall health management.

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