Comorbidity: a new paradigm to consider as a cure for cancer

Comorbidité : un nouveau paradigme à considérer comme un des remèdes contre le cancer

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Remerciements et autres mentions:

Financement : aucun.

Liens d'intérêts : l'auteur déclare ne pas avoir de lien d'intérêt.

Tirés à part: M. Baranes

ABSTRACT

The communication of a diagnosis of cancer appears to trigger a traumatic psychological reaction. Similar to an accident, cancer is a phenomenon that occurs during life; it may or may not be present and is struck with full force rather than being struck. Thus, the trauma associated with a diagnosis of cancer is unique and manifests as a comorbidity.
A better understanding of clinical trauma, following communication of a diagnosis, by the psycho-oncologist will allow psychological disturbances to be identified, which may derive from a previous unresolved trauma. Thus, we face a need for systematic psycho-oncological care to treat individuals with cancer, with a risk that the underlying trauma is unresolved.

● Key words: psychological construction; existing traumatogenic; 'force feedback' effect; comorbidity; psycho-oncological treatment.

RÉSUMÉ

L'annonce d'un cancer provoque des perturbations psychologiques avérées. À l'instar du traumatisme survenu après un accident, le cancer est une maladie posée sur un parcours de vie. Il sera là, ou pas. Il ne percute personne. C'est la personne qui le percute de plein fouet. C'est là, l'originalité traumatique de l'annonce d'un cancer. Et c'est en cela qu'elle crée une comorbidité.
Une parfaite connaissance de la clinique traumatique par le psycho-oncologue permettra de repérer, après l'annonce de la maladie cancéreuse, un mouvement psychique qui s'impose au patient en un retour vers son traumatogène (traumatogénèse composée de formations traumatiques antérieures non résolues). Une réflexion émerge alors sur la nécessité de soins systématiques psycho-oncologiques afin de s'assurer qu'en traitant le cancer d'un patient – donc son organe – nous ne négligerons plus de soigner la personne, toujours malade de cette maladie psychique qu'est un traumatisme, lequel se déclare en post-annonce : comorbidité au cancer.

● Mots clés : construction psychique ; traumatogène existant ; annonce cancer ; effet "force feedback" ; comorbidité ; soins psycho-oncologiques.

The lessons of clinical psychological trauma, including post-traumatic stress disorder (PTSD), have led to the identification, in patients suffering from cancer, of a phenomenon that has been unreported to date. The communication of a diagnosis of cancer appears to trigger a traumatic psychological reaction, establishing a genuine comorbidity that has to be managed alongside the cancer treatment. Being informed of the diagnosis at the onset of the illness appears to, in some patients, lead to a resurgence of a cumulative trauma due to previous unresolved psychological traumas. PTSD may develop independently but simultaneously with the cancer and must be treated.
Although this is a new perspective, it does not replace previous paradigms, but rather adds to our current understanding.

Pour citer cet article : Baranes M. Comorbidity: a new paradigm to consider as a cure for cancer. *Innov Ther Oncol* 2019 ; 5 : 153-160. doi : 10.1684/ito.2019.0165

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Psycho-oncological treatment requires extensive investigation into the past to identify a psychological construction associated with the current trauma. The topic addressed here is clinical trauma. The construction or reconstruction of a clinical case involves approaching it as a unique psychological configuration, putting aside common knowledge. This is a difficult exercise, and to address it we turn to what we refer to as a "web" which comprises several theories that are never usually applied to a clinical case.

Does a clinician, who takes the same approach and has the same frame of reference for each patient, investigate what they believe they already know?

In a way, a clinical case such as this is only "accessible" if the interpretation and history is highlighted, as this is often a repetition of something that has already occurred in the past. Having broken down certain components of a psyche that requires therapy, a chain of psychological events will form, providing the basis for a clinical case. The challenge facing the psycho-oncologist is to use this chain of psychological events to reconstruct the case on the basis of reflexion, interrogation, and hypotheses.

These experiences provide us with a better understanding of psychological structure and enable us to go further in this study, particularly when addressing the disease of the century: cancer.

When a patient is confronted with the news of cancer, he/she often also simultaneously discovers what the treatments are going to be in terms of surgery, chemotherapy, radiotherapy, and hormone therapy. This news may reactivate old psychological traumas which the patient had previously dealt with within their own psychological structure, by burying the trauma and its memory, as a way for the patient to protect him/herself. The patient now faces two harsh realities: an old one (the resurgence of an old trauma) and a new one (diagnosis of cancer). In such cases, it is unthinkable to treat one and not the other. Trying to cure a part of the body and not the patient is to abandon them with only half the problem resolved.

It is not surprising that so many return year after year, for routine check-ups, saying: "*I don't understand, I don't feel well!*". How many times do we answer: "*cancer always leaves an indelible mark*". And yet, it is not the cancer that leaves a mark, it is the psychological trauma that the cancer has reawakened, an old scar that was never treated and which creates a genuine comorbidity that must be treated as such.

The clinical trauma is a disease that is listed in the DSM (Diagnostic and Statistical Manual). The cancer coexists alongside the old trauma, rendering it a comorbidity of cancer.

To understand the complexity of our psychological structure, we have to understand that every painful situation represents a "psychological conflict" which can have several consequences. What we call "emotional pain" is a form of emotion due to extreme tension. When our emotions are balanced, demonstrating our psychological homeostasis, they strum like the strings of a guitar, and the emotion can be compared to a vibration.

Emotion as a vibration

In a scientific publication, it is more appropriate to speak of the central nervous system with its axons, dendrons, potentials, nervous impulses, synapses, synaptic clefts, neurotransmitters, serotonin, dopamine, etc., and numerous journals are already devoted to clinical neurophysiology and medicine of the brain.

Our main concern here is the clinical effects of emotion on patients, because if we want to understand what is happening in patients' psyches, then it is of paramount importance that we understand how our own psychological structure has been set up since childhood. Is it possible for us to seize this little window of opportunity and apply it to cancer?

Psychological structure

Psychological construction, herein referred to as "structure", is the result of a background which is not based on real facts but on perceptions of facts. These perceptions, which develop as we grow, contribute towards the construction of our psychological organisation (narcissism, defence mechanism, etc.). These backgrounds are stored in our psyche. Some of them, which are unexpressed, may constitute a pathogenic core that can be defined as "traumatogenic", the genesis or origin of trauma.

The term "structure" refers to many concepts: the skeleton, the foundations of a building, or the trunk and roots of a tree that may or may not feed on fertile ground and may or may not spread majestically, with or without dense foliage. However, we must be careful not to let ourself be blinded by what the patient communicates to us, and must not make the cancer responsible for everything.

As an investigator, we have to delve into the past in order to rebuild the structure with stronger foundations. In other words, we need to reconstruct the construction.

Our psychological structure is an integral part of every aspect of our lives. Like the foundations of a house, the structure is hidden and may be almost invisible. However, when our serenity is disrupted, it can always be glimpsed through the filter of our emotions.

Figure 1 is, in my view, a perfect metaphor for a trauma.

On the basis of the psychological structure, we can begin to comprehend the concept of something being "traumatogenic". To do so, we will describe precisely what happens psychologically to a woman who is abruptly informed of her cancer. This description represents what the majority of patients express, either explicitly or implicitly, when they are diagnosed with cancer, both in

Figure 1. The Double T (trauma tree).
Figure 1. *Le Traumarbre (arbre de traumatisme).*

terms of their emotional pain and as they recollect their traumatogenic past. This description is fundamental to understanding what is really happening psychologically when they learn about their cancer.

That corresponds to the specificity of the traumatic impact of the cancer diagnosis and of the "force feedback" effect (which we will explain later), creating the comorbidity. This particularity allows us to understand something we are not used to observing during a traumatic shock. Although we often talk about shock "hitting" someone (being run over by a car, hit by a train, learning of the death of a loved one), the experience of being diagnosed with cancer is totally different, and unlike a shock associated with a physical presence (violence, speed, etc.), however, psychological therapy can help to regain control of the situation.

Clinical experience teaches us to understand the psyche when it has been struck by what is commonly referred to as an "accident", creating a trauma.

However, in this case, the recollection of a traumatogenic event does not exist, since it is the present-day shock that has an impact on the present.

Similar to an accident, cancer is a phenomenon that occurs during life; it may or may not be present, and is struck with full force rather than being struck. Herein lies the traumatic uniqueness of being diagnosed with cancer, which thus manifests as a comorbidity. Because people are constantly moving during the course of their lives, when they are confronted with cancer, they strike it as if they are running into a wall.

In a way, patients do not consider themselves to be victims in the present. The news of cancer drives them to understand when the events that led to the illness took place. This is how the traumatogenic event re-emerges. As actors of the present but prisoners of the past, they begin to dig into their past. This psychological movement is depicted in the diagram below.

Imagine a woman going about her life, married with children and with a career, or a young woman just embarking on her adult life, or a retired woman with grandchildren. These women are living their lives and, one day, go for a routine mammogram. These women, who were in control of their lives, suddenly face an event over which they have no control and the news of the disease strikes them forcefully and unexpectedly. They are lost, in shock, and do not know how to react. However, the French health system takes control, and they are guided towards several specialists and do as they are told. No matter what they think or feel, they are continually brought back to the shock of the diagnosis.

This is the "force feedback" effect (outlined in the diagram below).

Zoom out: the impact

The key psychological event which must be understood in order to grasp what follows, is the time of impact. Psychologically, it is a traumatic moment but, above all, it is a trigger. This impact at that precise moment will open a breach that was disguising a stream of traumatic personal history which will reappear, bringing the patient back to a still painful context. What is important to understand is that at the psychological level, every defence the patient has built to protect themselves from former traumatic emotions, which are, most of the time, too painful to deal with, suddenly collapse at the point of the impact.

This psychological problem can be illustrated by the mechanics of two isolated bodies, helping us model the process and consequences of this shock.

Let us consider two bodies in interaction:

- P: the Patient of mass Mp and velocity (speed) Vp
- C: the diagnosis of Cancer of mass Mc and velocity (speed) Vc

At the time when the cancer diagnosis is communicated to the patient, the interaction between the patient and the event is clearly important; hence the conditions for physically modelling the problem are respected (external forces are not relevant).

What is the nature of the interaction between those two bodies? This can be likened to a collision. The term "collision" should be taken in its broadest sense, in that there is not necessarily physical contact between the bodies, but may be a shock or a repellent interaction.

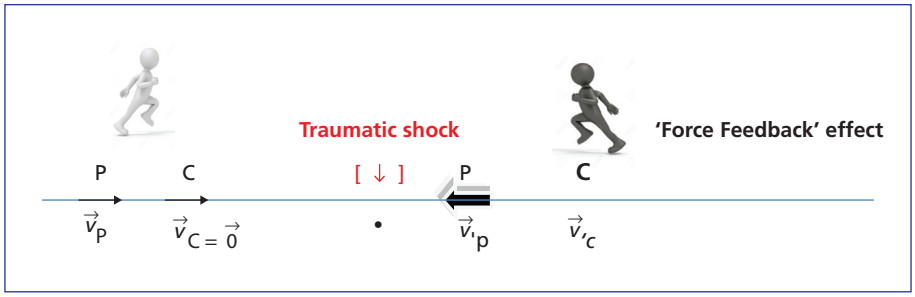


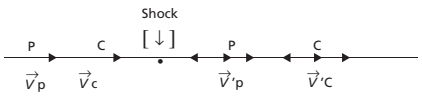
Figure 2. Mechanics of the psychological collision.
Figure 2. *Mécanique de la collision psychologique.*

We are interested in the description of the diagnosis of cancer and the description of the shock resulting from communication of the diagnosis. Why or how the communication is made is not relevant, in contrast to the patient's psychological state of mind before and after hearing this news.

As is the case in physics, we are not interested in the interaction that produces the collision, because we know it happens over a short range and over a short period, compared to the rest of the bodies' trajectory, therefore we are interested in the features of the bodies before and after the collision, in this case, particularly body P.

Considering P and C as moving along a horizontal axis, we want to know the velocity (speed) V'p et V'c following the collision (for a better understanding of what happens psychologically to the patient just after the collision).

General case: shock modelling between two bodies in an isolated system



Here, the body C is stationary, so the collision is flat (the kinetic resultant theorem).

We consider that the mass of the body is constant, so the principle of the conservation of mass applies.

We also consider that there is no distortion of the bodies, so the kinetic energy theorem applies (flexible collision case).

Particular case: analogy of the collision between the patient and the diagnosis of cancer (*figure 2*).

$$Mp << Mc$$

This results in a system with two equations featuring two unknown elements, the resolution of which leads to the expression:

$$V'p = \frac{2Mc\,Vc + Vp\,(Mp - Mc)}{Mp + Mc}$$

Here, P strikes a target C that is immobile *i.e.* Vc = 0, hence, to simplify:

$$V'c = \frac{2Mp\,Vp + Vc\,(Mc - Mp)}{Mp + Mc}$$

In the case of communication of the diagnosis of cancer to the patient, clearly Mc is greater than Mp; the news of the disease is far heavier than the patient him/herself.

We can overlook Mp over Mc and by simplifying the expressions, we obtain the following traumatogenic equation:

$$\vec{V}'p = -\vec{V}p \text{ et } \vec{V}'c = 0$$

Although target C does not move, the patient P moves backwards at an identical speed as the original forward movement.

This can be mechanically predicted, in a physical way, such that following the patient's collision with a "heavy" piece of news (the diagnosis of cancer), the patient will have to repeat the steps previously taken, steps that were previously present.

Mechanics of the psychological collision

From the descriptions of the patient, it is striking that the way in which the shock takes place and the consequences of it demonstrate a surprising analogy with a "two-body" system. Much as a body that collides with a solid material, it undergoes retropulsion. The psychological analogy of this body (the patient), when faced with the solid material (diagnosis of cancer), generates a retropulsion ("force feedback" effect), driving the patient back along their past routes, to the origins of the trauma.

This can be not only understood but predicted (mechanically as well as psychologically); when a patient collides with a "heavy" piece of news, he/she will have to traverse several stages of their life, which is precisely what clinical psycho-oncologists describe.

Zoom in: after the collision

Let's go back to our patient. The problem is that she is experiencing a confusing situation without being aware of it. She is not aware that the emotions she is experiencing (distress, fear of death) are the result of an alchemy between two different situations.

Her good sense leads her to express what she feels in the present. She only discusses the cancer with her oncologist, as well as the fear of losing her job; a life which she no longer has control of. In other words, she talks about the present situation.

She answers her oncologist's questions concerning her disease and pays attention to everything the doctor is saying, even trying to interpret his expressions and gestures. He gives her an update on her medical situation. During this consultation, there are three protagonists: the doctor, the patient, and the cancer.

I recall a patient who was referred to me and who told me that she had broken down during her medical appointment with her oncologist, who realised her frail state of mind and therefore suggested that she saw a psycho-oncologist.

As she entered my office she said: "*My radiotherapy ended two weeks ago, I have just seen my oncologist, but I'm under the impression that he is hiding something, such as a relapse*".

After further investigation, I realised that this patient was relieved to have finished the radiotherapy that followed chemotherapy. She had mentioned the removal of her PAC (port-a-cath) to her oncologist, because she thought that since the treatment was over, she no longer needed her PAC. The oncologist had never explained the treatment procedure and, in this case, he preferred to wait three or four months to perform a scan before removing the PAC. However, he said "*We will take care of that later.*" The patient, seized by fear, began to interpret this answer, just as any patient experiencing cancer would have, as meaning: relapse then death.

Addressing a psycho-oncologist during a consultation

During an appointment with an oncologist, the patient expresses his/her expectations concerning the disease. This is totally different to an appointment with a psycho-oncologist, as the patient attends the consultation as an individual rather than a sick person. Through the first meeting, the origin of the pain will emerge and all the psychological defence mechanisms that the patient has built up over the years collapse. The patient does not approach the illness in the same way.

The cancer is a protagonist during the consultation with the oncologist and only a by-stander with the psycho-oncologist. It could be said that the patient does not perceive him/herself in the same way.

The patient often arrives exhausted and then removes his/her "protective shell" which is a burden. Gradually, a "new skin" will emerge.

Usually, the patient starts crying and is able to make sense of the tears, often saying something like: "*I don't know why I'm crying. I usually don't cry*". The patient may understand that he/she is there to speak only about themself, their history and what they think about themselves.

The first difference resides in the fact that the patient is not discussing the same illness with his/her two doctors.

Most of the time, an oncologist refers the patient with a note such as: "*Dear colleague, please treat Ms. X who appears to be depressed since her cancer diagnosis*". It may be assumed that the patient has mentioned his/her fears, difficulties with the treatment, or anxiety concerning the future, but this is often not the case. Each session starts the same way: "*I am here on the recommendation of my oncologist. I have cancer. I deal with it as best as I can, but the worst thing is that since the diagnosis, everything has come flooding back to me, my past was too difficult and painful, and I want to get rid of those feelings. To that extent at least, the cancer was helpful. I knew it was coming, I expected it*". Other patients might not say they knew it was coming, or that they were expecting it, but rather appear to be surprised: "*I don't understand, I live a very healthy life. Things were complicated in the past but I thought it was behind me, now I realise it is not*".

Some say: "*I am not surprised I have cancer, given what I went through two years ago, I lost my job as the result of a very conflictual situation*" or "*I lost my parents seven years ago*". All of them, however, agree on the fact that there will be a "before" and "after", and that their lives must change.

The second difference resides in the fact that the patient is describing symptoms of the clinical trauma. An illness is described that, if untreated, might leave the patient chained to an unresolved part of the past which is now a part of the present. This is the trauma which is revealed by cancer.

Although the diagnosis of cancer acts as a trigger for a re-emerging trauma, it is also a detonator that triggers a shock wave, and a parallel between the biochemical and electrical impact on the emotions exists.

Numerous studies show the electrical impact of the brain's capacity to regulate emotions. The brain processes shock and its psychological and emotional interactions. This is the definition defined by the DSM (Diagnostic and Statistic Manual of Mental Disorders) and the ICD (International Classification of Diseases).

There is a need for emergency care in order to avoid establishment of post-traumatic symptoms. For the record, the two main international classification systems for mental illness are the DSM, published by the American

Psychiatric Association (APA) and the ICD, published by the World Health Organization (WHO). Those two models provide details on the diagnosis of the State of Acute Stress and of Post-Traumatic Stress, the latest version of the DSM No.V, dating from 18 May 2013. Thus, a diagnosis of an ASD (Acute Stress Disorder) or of a PTSD (Post-Traumatic Stress Disorder) involves a pathology in progress and requires immediate care from specialists in order to avoid being aggravated. The disorders arising from trauma and stress are defined as follows: Attachment Disorder, Disinhibited Social Engagement Disorder, and Adjustment Disorder. The semiology of psychological traumatic syndrome is based on a diversity of clinical forms following a damaging experience.

DSM No. IV specifies that in order for new disorders to be qualified as acute stress or post-traumatic stress, the person has to have been exposed to traumatic events such as: death, a death threat, injuries, a threat to physical integrity, sexual assault, or the threat of such an assault. DSM No. V concedes that a subject can be traumatised due to their emotional proximity to a victim (family or close friends) or because they have been constantly confronted with disturbing material as part of their professional activity. Another meaningful change is that DSM No. V does not require the subject to demonstrate severe fear when faced with the event. Epidemiological studies have demonstrated that an absence of such emotions lowers the risk of partial or full recurrence.

These definitions of clinical trauma allow for a better understanding of the impact of cancer diagnosis and hence the immediate need for psychological care. This is the comorbidity of cancer.

Our patients affected by cancer not only suffer due to the illness and its prognosis, but also suffer simultaneously due to the traumatic personal history that shapes the traumatic experience, the re-emergence of which is triggered by the word "cancer".

Prior to this point, the emotional tension that could have weakened the patient has remained confined through a process of defence and psychological resistance, enabling the traumatic event to take hold. The problem thus takes on new significance.

Everything remains "stationary" as long as the traumatic event does not reside within the psychological foreground. The patient is not even aware of its presence, thanks to the defence mechanisms installed to protect against fear.

This is nothing more than what is referred to in medical terms as "knowledge of psychological structure"; psychopathology, "psycho (psyche) -pathos (disease) -logos (study)", being the study of pathology of the psyche.

The role of oncologists is to treat the disease, however, the patient is not always given the opportunity to express what is taking place in their psyche and the psychological aspect of the disease may not be addressed. Oncologists have no way of knowing how the patient is dealing with not only the illness but also the "residue" of a past trauma, and that the patient's fears, tears, and depression are reactivated by the cancer, triggering release of this earlier emotion.

The concept of psychological pathos can only be understood if we recognise this form of excessive psychological tension. The concept of frequency, unlike homeostasis, can be considered as:

Pathos = Excess + Frequency.

Representation of psychological imbalance (*figure 3*)

Many studies have explored the impact of previous traumatic events. Ultimately, we should never overlook

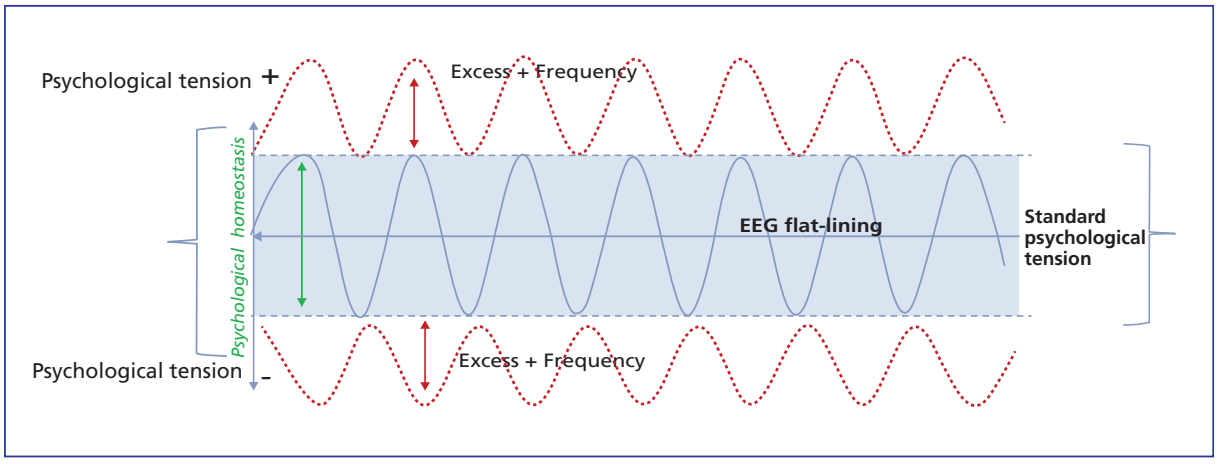


Figure 3. Psychological imbalance.
Figure 3. *Déséquilibre psychologique.*

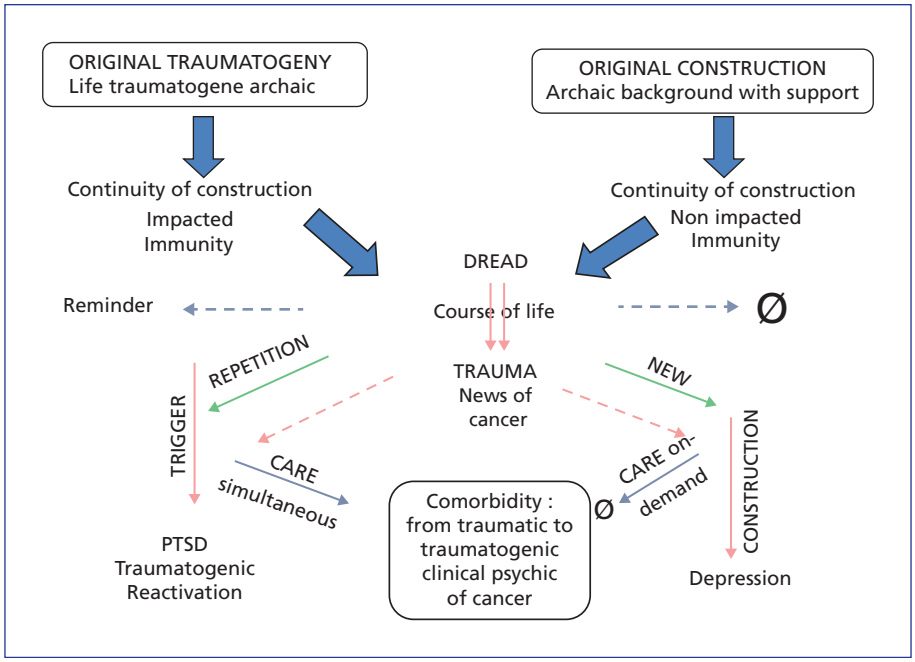


Figure 4. Comorbidity: the link with immunity.

Figure 4. *Comorbidité : le lien avec l'immunité.*

the fact that if the prospect of death is real, it has an impact on the present. However, this does not mean that the past is dead, on the contrary!

Most of the time, this leads us to address in the present, suffering from the past, as long as it is untreated. This is supported by two studies in June 2017. The first was published by the Acts of the American Academy of Sciences, "Proceedings of the National Academy of Sciences", by Michael L.M. Murphy and Sheldon Cohen's team at Princeton University. This study shows the impact that stress early in life can have on the immune system in the long term. This study measured the consequences of painful divorces on children's health, sometimes 20 to 40 years later. A total of 201 healthy adults were put in quarantine and exposed to a common cold virus, then observed for five days. Adults whose parents had divorced or separated after a painful conflict were three times more likely to get ill, compared to those whose parents were divorced but still in contact.

"*Those experiences of stress at the beginning of life have an impact on our physiology and the inflammatory process, that increase the risk of health issues and the risk to develop chronic sickness*" explains Michael Murphy at the Carnegie Mellon University.

"*Those studies show a progress in our comprehension on how stress endured by children in a family can increase the vulnerability of a child towards diseases 20 to 40 years later.*" These studies underline that the immune system is "*an important factor of the negative impact that represents a family conflict in the long term*" explains Sheldon Cohen, professor of psychology and co-author of the study. If, according to this study, the traumatic event (i.e. the origin of the trauma, stress, or moral suffering) is still tangible 20 to 40 years later, we can ask the question: would the outcome have been the same if the individual had been treated at the time? Would the consequences that this study implies, on the physiological as well as inflammatory level, have been the same?

Another study, published in *Le Monde Science et Techno* by Gustavo Turecki, psychiatrist and researcher in neuroscience at the Douglas Institute of McGill University in Canada, shows how early abuse is imprinted in the human brain, making people more vulnerable to stress and depression. Dr Turecki questioned "*how deficiencies experienced by young children can make them, years later, so vulnerable*". For him, "*the impact of these early adversities, in terms of trauma, is linked in a psychological level, as well as in a biological and physiological level*".

Once again, we can see that an untreated traumatic event remains active. The studies mentioned above show how a traumatic event from the past, when untreated, can have major repercussions in the present, whether they are physiological, biological, psychological, or behavioural.

As far as the clinical psychology of cancer is concerned, it reveals the true psyche of the patient, which is revealed by the diagnosis of the cancer.

With this in mind, I have reworked the diagram (*figure 4*) that brought me overseas and that was the first step in a 600-page doctoral thesis in clinical psychopathology. The figure shows the beginning of a "behaviour" versus the construction of a "PTSD", and summarises the possible

impact of a traumatic past event which may generate a comorbidity with cancer. The figure shows that the impact due to the diagnosis of cancer differs according to the patient's history. The more painful the patient's past, the more likely the impact of the traumatic shock will bring the patient back to their past, leading to a reactivation of the traumatic event and thus a comorbidity of cancer.

Conclusion

A better understanding of psychological structure allows us to grasp the notion of comorbidity, and this knowledge should be based on objective, empirical evidence. Regarding past trauma and cancer, two observations can be made. First, repetition of a return to the traumatic event at the moment of the trauma caused by the diagnosis of cancer, a "force feedback" effect produced by the movement of psychological collision between the subject and diagnosis. Secondly, the immediate consequences of the "force feedback" effect reveal the reality of the resurgence of the traumatic event. This is the comorbidity of cancer.

Thus, we face a need for systematic treatment to treat individuals with cancer, with a risk that the underlying trauma is unresolved.

I believe we need to accept this concept in order to appropriately consider the variables generated by cancer as well as those that may contribute to its origin. The concept of the power of the psyche should no longer be ignored. However, because the psyche cannot be approached using a numerical system, we must approach it using basic data, accessible to a psycho-oncologist; data we refer to as "the good sense of psychological logic". This is therefore not a mathematical approach but one that meets the requirements of logical demonstration.

I should add that although my experience in clinical matters has revealed differences in gender, no differences between men and women, or even between ages, were identified regarding the concept of comorbidity or the reactivation of the traumatic event in question. Nevertheless, men appear to have more difficulties expressing their feelings regardless of the traumatic event in question. It usually takes longer for men to express their emotions (due to a stronger level of resistance). Studies on psychological impact on biology, physiology, immunity, and behaviour therefore represent only one aspect, as a unit of measurement based on "clinical repetition + good sense of psychological logic". However, we cannot afford to wait for a numerical measurement.

The psychological element, and psychological paradigm, is different for each individual, hence, experience will help support this notion of trauma as a comorbidity of cancer.

With future research on the origins of cancer, its various treatments, models of prevention, as well as psycho-oncology and treatment aimed at clinical psychology associated with cancer, we hope that the notion of traumatic events as a comorbidity of cancer will be be further explored and understood.