

# Torsadogenic Index: Its Chinese Medical Origin

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## ABSTRACT

The foundational chronology of **Torsadogenic Index** is introduced to explain the relationship between impending death situations and drug prescription, combination, self-indication, or abuse of torsadogenic pharmacological products. The pathophysiological basis of Torsade de Pointes is presented with the most frequent causes of Long QT syndrome. Traditional Chinese Medical principles are exposed in order to help people to understand its para-logical sequence, providing another view of medical explanations upon scientific evidence. Development of **Torsadogenic Risk Management Project** and **Torsadogenic Traceability** concepts derived from these Chinese Medical perpetual axioms are presented in this paper.

**Keywords:** T. Index; TCM Principles; Scientific Evidence

## 1. Background

Invited by the Chinese Government to the 8th BIT's International Congress of Drug Development, Science and Technology, I assisted to the Overture Ceremony in the Beijing International Convention Center [1].

In Expert's Presentation, I met Dr. Jufeng Wang, for that times Chief of the Exploratory Office of Toxicology in Harvard. During his interesting dissertation [2], he announced several medications that derive into sudden death for electrocardiographic QT interval prolongation. Deeply impressed, I returned to Argentina wondering how many impending death situations could be referred to patients that had previously taken drugs.

Back at work, I asked Dr. Wang for a complete list in order to prevent its dangerous consequences. With great surprise, 80 pharmacological products of common use appeared as potentially cardiac arrest threatening risk [3]. All of them lead to death for the same reason: the development of a menacing arrhythmia called *Torsade de*

*Pointes (TdP)* [4,5].

## 2. Introduction

*Torsade de Pointes* is a potentially tachyarrhythmia capable to progress into ventricular fibrillation, a major cause of heart arrest [4].

Long QT syndrome appears due to genetic mutation (**Congenital LQTS**) or secondary causes (**Acquired LQTS**) as [5]:

- Bradyarrhythmias: sinusual arrhythmia—sinus bradycardia—AV block;
- Metabolic abnormalities;
- Drugs;
- Central Nervous System's injuries: thalamic hematoma—subarachnoid hemorrhage;
- Hidroelectrolitical disturbances;
- Malnutrition—*anorexia nervosa*—liquid protein elemental diets.

## 3. Physiopathology

This TdP condition is caused by an ionic channel dysfunction in cardiac cells membranes [5].

It occurs due to blocking potassium efflux or excessive sodium entry in cardiac cells, causing intracellular positive ion's overload that delays ventricular repolarization,

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facilitating early depolarization [6].

#### 4. Material

After obtaining the suspicious drug list, I began spreading this knowledge in order to mitigate risks. First conference took place in La Plata Children's Hospital; and its personnel kept in touch with me, consulting about pharmacological indications over quoted drugs.

From this group of patients was extracted the case presented in *Torsadogenic Index: a proposal to improve survival rates in cardiac arrest due to prescribed drugs* [7].

From the beginning, this *impending death situation* was analyzed under Traditional Chinese Medicine (TCM) principles, founding its reasons in its ancient intricate relationships [8,9].

Quoted case in *Frontiers of Medical Pharmacology Research and Outcomes* was a one-year-old infant with acute lymphocytic leukemia under oncological treatment with vincristine, daunorubicin and pegylated asparaginase—MARMA Interfant 05 IB protocol—prescribed in a particular season and in a specific hour of the day [7].

These facts, almost irrelevant for Western medical science, are crucial to understand the following consequences that finished in the cardiac arrest of this child [8].

#### 5. Method

A chronological sequence shows quoted cases characteristics that lead to conclusions according to TCM view.

First of all, TCM developed the **Five Movements Theory** for explaining a Cosmological order; the harmony in human nature and—in our bodies—their organs and viscus relationships. This Five Elements' Principles remind me the **Euclidian Geometry's Axioms**. It's not by chance that Euclid explained Universe's structure based upon its Five Regular Polyhedrons, naming them in the same way as Chinese masters did.

In particular, reference to **Wood** element, it's compound by **Liver**—as its organ; and **Gallblader**—as its viscus. Unlike in Water, where patient condition “falls down” as it gets worse—like in a cascade, Wood pathologies behave like flames: as condition get in progress, the “burning state” is more serious over the patient; “*and the flames grow up*”.

Oncological drugs—vincristine, pegylated asparaginase and daunorubicin—even administrated in correct prescription and doses—have notorious hepatotoxic adverse effects.

This condition is called “**Toxic Heat**”; and over the **Liver**—a **Wood zhang**—may provoke an “ignition” that puts this organ in serious functional danger.

Furthermore, medication was administrated in **Summer**—a **Fire season**; another reason that make Liver—as

a Wood organ—vulnerable to flames [10].

Finally, treatment was accomplished at 12:30 a.m.: very near the most **Yang hour**, and sun plenum clarity and heat.

Synthetically, under Traditional Chinese Medicine's view, this child received its hepatotoxic medicines (“**Toxic Heat**”); in Summer (“**Fire station**”); and at mid-day (“**Fire hour**”).

Quoted deductions about this summary of conditions that affected **Heart**—the next organ in TCM's “**Mother and Son Rule**”—is based upon **Cheng Generation Cycle** that allows a creative sequence between the Five Elements in Chinese Medicine.

**Heart** is the “Son” of Wood; so that “**Toxic Heat**” damaged it so seriously, that **cardiac arrest** was the corollary of this accursed example.

#### 6. Results

As quoted in *Frontiers* journal, oncological drug plan was scheduled with a week-interval between drugs; and this kid had a successful treatment and kept alive [7].

Downloaded by more than 500 subscriber experts; *Frontiers editorial* considered *Torsadogenic Index's* Impact Factor as one of the most impressive of this prestigious journal.

Invited as speaker to *5th Drug Discovery and Therapy Dubai* conference and last *5th World Drug Discovery Congress in Boston*, made me possible to introduce new **Drug Risk Management Project** [11] and **Torsadogenic Traceability Concept** [12] for reducing death rate due to drug prescription, combination and self-indication [13-15].

The most enthusiastic sponsor of this work was Dr. Wang, current President of F.D.A. China and Director of the Chinese National Drug Evaluation Center. His support has been fundamental for this success.

#### 7. Conclusions

Still in 21th century, Traditional Chinese Medicine contributing to Western science can be useful for taking decisions through its ancient and perpetual principles.

Originated from TCM parameters [16], **Torsadogenic Index Management Project and Torsadogenic Traceability** [11,12] will be main subject for discussion into next Washington F.D.A. Meeting agenda.

Turning results into evidence will convince Western Medicine [17,18] to convoke these alternative ways for improving patients' health [19-22].

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