

The Role of TCM In Pancreatic Cancer Treatment

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What do Steve Jobs, Luciano Pavarotti and Lu Fuyuan have in common? They have all battled with pancreatic cancer but to no avail. One could be one of the most influential people in history or the most successful tenor of all times or even the first minister of the Ministry of Commerce in China, but still could not win the war against pancreatic cancer. Surprisingly, the pancreas is not even part of the key organs in 2,000 years of Traditional Chinese Medicine (TCM) practice, so how would a TCM practitioner diagnose or treat it?

The Greek word pancreas, "pan" means all and "kreas" means flesh, was first discovered by Herophilus and named by Ruphos. In Chinese, the word "Yi" (modern term as pancreas) is not clearly documented in its ancient literature and the first appearance of the word Yi according to *Kangxi Dictionary* was book of *Guangyun* in 1008 "Yi, flesh in-between rib." In fact, a search of all the famous texts in the pre *Qin-Han* dynasty era - such as *Erya*, the oldest surviving Chinese encyclopedia from 250 BC; or *Shouowen Jiezi*, the earliest Chinese dictionary from 121 AD; or the most famous doctrines of TCM, *Huangdi Neijing* and the *Shang Han Lun* - did not reveal any appearance of Yi. Medically, the first linking of the Chinese word Yi to the Western pancreas was in books written by Western missionary physicians visiting China in the late 1800s.

The modern understanding of pancreas is that it is a gland organ in the digestive and endocrine system of vertebrates. It is both an endocrine gland producing several important hormones including insulin, glucagon and somatostatin; as well as an exocrine gland, secreting pancreatic juice containing digestive enzymes that pass to the small intestine. These enzymes help in the further breakdown of the carbohydrates, protein and fat in the chyme. An organ serving multiple functions should be considered as a vital organ, yet how could it be ignored in all of the Chinese encyclopedias and TCM doctrines? There are multiple ways to investigate this mystery, one could research the TCM doctrines for organs of similar functions as pancreas; or research for organs that are not vital in Western medicine and reconsider their translation to vital TCM organs.

A quick research in the Western medicine and one organ quickly surfaced - spleen, Galen's "organ of mystery." Aristotle noted spleen's anatomical position, but Erasistratus concluded that it had no function of its own, a view that prevailed for several centuries as Harvey in 1653 spoke of it as an "ignoble organ." This view is consistent with the modern view of spleen as it acts primarily as a blood filter - so it is possible to remove the spleen without jeopardizing life. One could not help wonder how could the Western "ignoble organ" be translated to a TCM vital organ - unless, the translation of spleen in TCM, or Pi in Chinese, is less than ideal.

Pi is one of the TCM major organs with many key functions. Pi is known as the "foundational organ post-birth" responsible for conversion and transportation of the nutrients and liquids. Pi is also responsible for the management of blood, as a deficient Pi can cause visible blood in the stool and uterine bleeding embolism. Pi's meridian is *Tai-Ying*, which complements the stomach's *Yang-Ming* meridian. Comparing TCM Pi to Western pancreas revealed many similar functions: pancreas

secretes pancreatic juice containing digestive enzymes (Pi transports liquids) that assist the digestive system (Pi complements the stomach meridian) to breakdown nutrients (Pi converts nutrients); pancreas also secretes important hormones into the blood (Pi manages blood). With so many similarities, perhaps, the translation of TCM Pi should include the Western pancreas.

In order to further confirm the association of TCM Pi with pancreas, one could examine how the TCM practitioners treat patients with pancreatic disorder. If the main treatment formulas are based on herbs benefiting the Pi, then one could further assure the relations of TCM Pi with pancreas. After researching hundreds of Chinese and English papers within the last five years in China/Asia on Demand (CAOD), PubMed, and BioMed Central - with the filter of patients within the age group of 20 to 70 years old without other complications or diseases, and a narrow focus of papers with statistical significance ($P < 0.05$) - a theme starts to emerge.

About 1,302 patients in four categories of pancreatic disorders have been treated, including acute pancreatitis (AP), chronic pancreatitis (CP), diabetes mellitus (DM), and pancreatic cancer (PC). Three common TCM formulas are used to treat AP patients, *qin-yi-tan*, *da-chen-qi-tan* and *da-chei-hu-tan*. Within these formulas, the common ingredients *huang-lian*, *huang-qin*, and *chei-hu* have been known to benefit the Pi according to *Yi Xue Zhong Zhong Can Xi Lu*, whereas *da-huang* has been known to benefit the stomach - part of the digestive system - according to *Shennong Bencao Jing*. The common TCM treatments for CP - *chai-hu-xu-gan-san*, *lun-dan-shei-gan-tan*, *shu-gan-tan*, and *man-yi-tan* - has the ingredients *chei-hu*, *huang-qin*, *fu-lin*, *gan-cao*, and *bai-zhu* which benefit the Pi, while *gan-cao* also benefits the stomach.

Among the many TCM treatments for diabetes like *qin-ren-fong*, *zi-yi-fong* and Hao's custom formula; the common ingredients *huang-qi*, *huang-lian*, *huang-qin*, and *ren-shen* benefits the Pi, while *da-huang* benefits the stomach. The WD-3 formula, *wu-mei-wan*, and Fang's custom formula are used to treat PC; and the common ingredients *huang-qi*, *huang-lian*, *bai-zhu* and *fu-ling* benefits the Pi. In other words, the principle herbs used to treat pancreatic disorder are TCM Pi focused.

Although the anatomic term of pancreas did not appear in any of the early TCM doctrines nor Chinese dictionaries, it does appear that pancreatic functions are closer to that of the TCM Pi. Although it has been translated to Chinese Yi for the past two centuries, with the modern understanding of pancreas and spleen functionality, perhaps, TCM Pi translation should include the western pancreas. This is especially important to the treatment of pancreatic disorder, as more than one thousand patients have been treated with TCM Pi herbs successfully. If Steve, Luciano and Fuyuan been aware of this latest development, perhaps they could complement their treatment with TCM Pi methods and increased their odds in winning the war against pancreatic cancer.

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