

Review article

Chinese medical treatment of brain tumor

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Brain tumor is a general term referring to a group of over 15 types of neoplasms, including astrocytomas, gliomas, and oligodendroglial tumors. These types of tumors are relatively infrequent, together making up about 9% of all primary tumors. They are, nonetheless, a major health concern, as the prognosis is poor—there are serious symptoms, and about half of the cases are fatal within one year of diagnosis, with another one-fourth of cases leading to death within five years. Only about 20% of primary brain tumors are cured by surgery and other therapies. Further, while most brain tumors arise in the age range 40-60, some types may affect young people: each year, one in three thousand children dies of a primary brain tumor before age ten. Since brain tumors are usually characterized by slow growth and local invasion without metastases, the predominant methods of therapy are surgery and radiation therapy. To a limited extent, chemotherapy may be applied, including corticosteroids to reduce brain swelling and thus reduce symptoms, and hormone therapies when estrogen-dependent tumors, such as meningiomas, are diagnosed.

According to cancer specialists in China, surgery is to be utilized when possible, that is, when the tumor is of relatively small size. The outcomes can be improved by utilizing Chinese herbal medicine in addition to standard therapies, or, in cases of diffuse or large cancers that are inoperable, in place of them.

The basic Chinese medical approach to understanding and treating brain tumor, as with most other health problems, is to first analyze the disease according to the fundamental principles of yin/yang balance, the condition of the internal organ systems, and the status of the three moving fluids (humors): qi, moisture, and blood. This analysis is then used to select a treatment, and adjustments are made according to clinical experience. The results of brain tumor treatment are published in journals and in summary books about cancer therapy; some of these have been translated to English (1-6).

Like most other forms of cancer, brain tumors were less common in earlier times than at present. Still, their existence was suggested by certain symptoms and treated surgically even 1,800 years ago in China. One of China's most respected medical figures, Hua Tuo (born ca 140 A.D.), was especially famous for his surgical abilities. He knew how to do brain surgery and remove tumors when nobody else dared to try. Hua Tuo was put to death when the tyrant Cao Cao ordered him executed because Hua Tuo had diagnosed a brain tumor to be the cause of his agonizing headaches and suggested surgery to resolve the problem: Cao Cao feared this would be an assassination attempt. Other incidents of this nature in Chinese history led to a reduction in reliance on surgery, so that treatments of brain

NOURISHING YIN

Rehmannia	Rehmannia glutinosa	root
Ophiopogon	Ophiopogon japonicus	tuber
Anemarrhena	Anemarrhena asphodeloides	root
Glehnia	Glehnia littoralis	root
Scrophularia	Scrophularia ningpoensis	root
Lycium	Lycium barbarum	fruit
Dendrobium	Dendrobium moniliforme	leaf and stem
Tortoise shell	Chinemys reevesii	shell

CONTROLLING YANG

Uncaria	Uncaria rhyncophylla	stem
Haliotis	Haliotis gigantea	shell
Margarita	Pinctada margaritifera	inner shell
(mother of pearl)		
Hematite	Hematite	mineral
Scorpion	Buthus martensi	whole
Centipede	Scolopendra subspinipes	whole
Silkworm	Bombyx mori	whole

DRAINING MOISTURE

Hoelen (poria)	Poria cocos	whole
Alisma	Alisma plantago-aquatica	rhizome
Atractylodes	Atractylodes macrocephala	rhizome
Polyporus	Grifola umbellata	whole
Plantago	Plantago asiatica	seed

RESOLVING PHLEGM

Arisaema	Arisaema consanguineum	rhizome
Acorus	Acorus gramineus	rhizome
Pinellia,	Pinellia ternata	rhizoma

ACTIVATING BLOOD

Vaccaria	Vaccaria pyramidata	seed
Luffa	Luffa cylindrica	fiber
Persica	Prunus persica	seed
Red peony	Paeonia lactiflora	root
Curcuma	Curcuma longa	rhizome

TABLE 1: Herbs used for traditional medical treatment of brain tumors. The first column lists common name; the second column lists Latin binomials (since multiple species are often used as a source, this table lists a prominent species currently available); the third column indicates part used. The selection of herbs and the specific dosage of each herb to be used will depend on the decisions of the prescribing physician. The herbs have been divided into five main categories of therapeutic effect.

tumors using herbs became a dominant method. The disease being treated could not have been positively diagnosed in the absence of surgery or modern techniques such as MRI, CT scanning, and x-ray, so any treatment of brain tumor in China using traditional herbal medicines was done without a diagnosis of the actual condition, until the past few decades.

It can thus be said that specific treatment of brain tumor is basically a modern application of traditional Chinese medicine, and it is still in the developmental stages. The importance of this field is indicated by the establishment of a glioblastoma clinic in Beijing,

CHANG (6)	OU (5)	JIA (1)
Smilax	Duchesnea	Snake skin
Strychnos	Lobelia	Wasp nest
Tribulus	Scutellaria	Pteropus
Solanum	Prunella	Earthworm
Imperata	Semiaquilegia	Indigo
Xanthium	Dryopteris	Subprostrata
Paris	Salvia leaf	Arca shell
Heleocharis	Camellia root	Niter
Realgar	Salix leaf	Chrysanthemum
Amorphophallus	Gekko	

TABLE 2: Herbs used to inhibit tumors that have been applied to treating brain tumors. The herbs listed here are anti-tumor ingredients, and are not being used to treat the physiological underpinnings of brain tumor formation as described in traditional terms. Some of these items may be selected, however, because of dual effects (e.g. earthworm calms internal wind, prunella purges liver fire). The columns present herbs from different authors (1,5,6). In preparing this table, exclusions were made so that no items were duplicated from the above lists or from the current sources. For Latin binomials, see *Oriental Materia Medica* (7).

inspired by early success in treating this type of brain tumor with herbal formulas devised in the 1970's.

In the analysis of yin and yang balance, it is noted by Chinese physicians that patients with brain tumor tend to have a red tongue, they can easily suffer from convulsions, and there are common symptoms such as headache and vomiting. These signs and symptoms of the disease correspond to a deficiency of the yin and accompanying lack of control of the yang. For example, the headaches and vomiting can be related to an intense upward surge of the yang energy; convulsions are traditionally categorized as part of a yang syndrome of the liver system ("liver wind" or "internal wind"), and the red tongue mainly occurs when the yin is inadequate, producing excessive blood circulation at the surface.

In the Chinese medical dogma, the brain is considered to be an extension of the kidney system, one of the six major organ systems described in ancient times and still mentioned today by traditional doctors. In modern terms, the kidney system includes the endocrine system, the kidneys, the bone marrow, and the brain. Therefore, the description of the brain tumor is a secondary manifestation of a yin deficiency of the kidney. It is thought that this yin deficiency syndrome yields a yang condition of the liver (in traditional terms of the five elements system, the water does not nourish the wood). This causes an upward surging of energy and an accumulation of fluids in the brain. Thus, the flow of qi is perversely upward and the moisture accumulates in the upper body. The pathological accumulation of stagnant fluid falls into the general category of "phlegm" (any thickened fluid in the body other than blood). The excessive qi and fluid moving upward and accumulating increase the intracranial pressure, yielding many of the characteristic secondary symptoms of brain tumors.

As the pathological condition in the brain becomes more severe, the blood circulation stagnates. This situation is reflected in the tongue, which becomes reddish purple, and in the pulse, which becomes wiry, indicating both the pathology of the liver system and the constriction of circulation. Blood stagnation is a typical condition that leads to and develops from cancer; it also occurs as a result of modern cancer therapies, especially surgery and radiation.

Scrophularia	Chih-ko	Prunella	Achyranthes
Rehmannia	Curcuma	Sargassum	Hematite
Ophiopogon	Niter	Salvia leaf	Dragon bone
Glehnia	Lacca	Chrysanthemum	Oyster shell
Margarita	Alum	Oyster shell	Tortoise shell
Haliotis	Strychnos	Laminaria	Scrophularia
Uncaria	Pteropus	Red peony	Asparagus
Peony	Agrimony	Vaccaria	Peony
Plantago	Haliotis	Wasp nest	Capillaris
Alisma	Silkworm	Persica	Melia
Polyporus	Cicada	Angelica	Malt
Hoelen	Equisetum	Arisaema	Licorice
Pharbitis	Tortoise shell	Centipede	Fish otolith
Scute	Uncaria	Scorpio	Lycium
	Wasp nest	Gekko	Rehmannia
	Oyster shell		Zizyphus
	Luffa		Curcuma
	Scorpion		Acorus
	Chrysanthemum		Pearl
	Earthworm		Haliotis

TABLE 3. Sample herbal formulas suggested for treating brain tumors. These formulas are presented in English language texts. One or two case studies demonstrating their effective utilization are presented in those texts, but there is no data from application to several cases. The first column is a formula to nourish yin, depress yang, release water, and lower pressure (2); the second column is an approach by Jia Kun (1), using the standard antitumor remedy Ping Xiao Dan (1, 8) plus a decoction of Can Ju Tang for relieving headache, vomiting, and other secondary effects of the tumor. The third column is a formula reported as a decoction for cerebral tumors (5) that emphasizes softening the tumor mass with salty agents, promoting blood circulation, and inhibiting the tumor with anticancer agents. The fourth column is a partial listing of ingredients of two formulas combined together to treat brain tumor (3), the traditional Zhen Gan Xi Feng Tang for calming the agitated yang energy, with the Fish Otolith Formula, designed for brain tumors.

Utilizing this analysis, Chinese physicians have designed several herbal formulas to treat brain tumors. The herbs selected to produce such formulas are derived mainly from those listed in *Tables 1 and 2*. There are other possible etiologies for brain tumors that are discussed in Chinese medical texts; therefore, one should carefully diagnose each patient to assure a correct therapeutic approach. The herbs described here are among those most frequently used.

There are some herbs that are thought to direct the action of an herbal formulation to the brain. Most notably there are: fish otolith (a stone that forms in the brain area of certain fish), walnut (which has an appearance like that of the brain), and sparrow's brain. There are also some herbs that are thought to dissolve masses, including tumors, because of their salty nature: the seaweeds laminaria and sargassum, and the sea shells oyster and arca (arca also vitalizes blood circulation).

Aside from using this general harmonizing approach, certain other herbs are often utilized as specific antitumor agents for brain tumors. In *Table 2*, examples are given from three sources.

The formulation given to a patient will depend on the analysis of the disorder made by the physician and may emphasize one or

Xifeng Ruanjian Tang	Bushen Huantan Tang	Nanxing Jiang Xia Tang
Scorpion (4.5 g)	Pinellia (15 g)	Arisaema (15 g)
Centipede (6 pieces)	Arisaema (15 g)	Pinellia (15 g)
Salvia (20 g)	Acorus (9 g)	Prunella (15 g)
Cnidium (4.5 g)	Tang-kuei (9 g)	Silkworm (9 g)
Silkworm (9 g)	Comus (9 g)	Acorus (6 g)
Earthworm (9 g)	Red peony (10 g)	Earthworm (15 g)
Pinellia (9 g)		Centipede (2 pieces)
Uncaria (15 g)	Add, according to diagnosis:	Gekko (2 pieces)
Atractylodes (9 g)	<i>Wen Dan Tang (phlegm/damp)</i>	Eupolyphaga (9 g)
Gastrodia (9 g)	<i>Longdan Xiegan Tang (heat)</i>	Polyporus (15 g)
Semiaquilegia (15 g)	<i>Ji Ju Dihuang Wan or</i>	Hoelen (15 g)
Prunella (30 g)	<i>Yiguan Jian (yin deficiency)</i>	Chrysanthemum (9 g)
Fritillaria (9 g)	<i>Buyang Huanwu Tang or</i>	Cassia seed (15 g)
Ligustrum (15 g)	<i>Xuefu Zhuyu Tang (stagnation)</i>	Celosia (9 g)
Lycium (15 g)	<i>Tianma Gouteng Tang or</i>	
Usnea (15 g)	<i>Zhenggan Xifeng Tang (wind)</i>	
Fenxinciao (15 g)		

TABLE 4. Sample herbal formulas suggested for treating brain tumors. These formulas (dosage indicated in parentheses) are presented in Compendium of Secret TCM Formulas (11). The first column is Xifeng Ruanjian Tang, the decoction to extinguish wind and soften accumulation. It was applied to 7 cases of brain tumor, with resulting survival time from 5 to 16 years. The second column is Bushen Huantan Tang, the decoction to tonify the kidney and transform phlegm. It was applied to 213 cases of brain tumor, of which only 29 were treated first by surgery; additional herb formulas (12) were given to all patients according to specific symptoms or diagnostic categories (dosage as per classical literature). The 1, 3, and 5 year survival rates were 71.2%, 34.9%, and 29.7%. The third column is Nanxing Jiang Xia Tang, a formula that removes moisture, resolves, phlegm, and reduces spasms. It was given to 67 cases of tumors of the central nervous system, of which 43 had undergone surgery. Cure was obtained in 7.5% of cases, marked improvement in 24% of cases (alleviation of symptoms but tumor still present); 46% showed improvement, but the disease still caused symptoms and ultimately was fatal, and 22% had no benefits.

more of the therapeutic approaches described above. Typically, slight adjustments in the treatment are made as the symptoms change.

Some sample formulas for treating brain tumors that have been suggested in books about cancer therapy are listed in *Tables 3 and 4*. These are usually administered in the form of decoctions in very high dosage (100-200 grams per day) or in pills (12-24 grams per day), or a combination of the two; sometimes a sugar paste is prepared from the decoction to produce an easier form (compared to liquid prepared daily) to administer regularly. The treatment time will be several months, and typically, one year. In some cases, the treatment may be given intermittently: for example, seven days of treatment followed by seven days without treatment.

The large number of ingredients in each treatment (14 or more) reflects the Chinese practice of utilizing three or four herbs in each

category of therapeutic action and combining several activities, such as nourishing yin, settling yang, promoting circulation of blood, draining fluid accumulation, and inhibiting the pathogenic factor (tumor growth).

In China, such treatment is neither difficult to find in major city hospitals, nor is it expensive; the decoctions are not very enjoyable to drink, but they are often prepared at the hospital pharmacy or by a family member, thus making them relatively convenient. In the West, the situation is certainly different, in that practitioners with knowledge and experience in this field are few, the cost of treatment is usually not covered by insurance and is somewhat expensive for the patient (though the costs involved are far less expensive than other medical technologies employed), and the decoctions may have to be prepared at home. In an effort to make such treatments more accessible, several organizations have been involved in training practitioners and have made herbal preparations available in the more convenient form of dried decoctions or tablets. Patients who have difficulty consuming the herbs as the result of nausea or other digestive system problems may be treated first with acupuncture or other physical therapies.

Another type of brain tumor treatment used in China is the topical application of herbs to the head in the area near the tumor. From the Western medical viewpoint, this should not be effective, since there would be little penetration of active components into the brain (or the tumor), but there have been reports of satisfactory results. These topical methods are also not easily employed in the West, as they involve difficult-to-obtain or toxic ingredients.

The question which Westerners must raise is this: are these remedies really effective? To answer this question, one must define effectiveness and examine all available data. For example, if a patient is spared convulsions, headaches, and other symptoms, but dies within the time period that is defined by standard prognosis in the absence of Chinese medical intervention, is that effective? Or, if the average duration of survival is increased from six months to eighteen months, would that be effective? Finally, if the five year survival rate ("cure rate") is increased by a few percentage points, is that sufficient?

If the answer to any of these is yes, then it appears that Chinese medicine is effective, though it is not yet possible to pin down the level of effectiveness at this point due to the small total number of patients for which long term records were analyzed. According to Pan (2): "The natural course of untreated primary or secondary brain tumor is usually three to six months. With surgery, radiotherapy, or chemotherapy, combined with traditional Chinese medicine, the survival rate can be increased to 4 to 5 times." Although any statistical basis for this claim is not presented, taken at face value, it is not clear what portion of the increased survival might be attributed to adding traditional Chinese medicine to the Western medical approaches. According to this statement, the survival of patients with combined therapy is expected to be one to three years.

According to Jia (1), "Early detection and treatment provides a long survival. If delayed or not treated properly, the result is not good." Details are not provided for this generalization, but two case histories are presented, with patients apparently cured. The first case, a twenty year old female, was treated for one year, and she was followed-up thereafter and reported to be strong and healthy 13 years after the tumor first produced symptoms. The second case, an eight year old female, was treated for nearly a year, and was reported healthy at the end of the treatment time, but no follow-up was provided (she was treated soon before the manuscript was written). It is generally

recognized that early detection and treatment is the ideal situation; yet, the longer survival time claimed for several documented Western interventions may simply be the extra time allotted by earlier detection as opposed to prolonging the total life span.

Shi (3) reports that 15 patients were treated at their clinic in the early 1970's, of which five had survived more than five years. This is not necessarily a higher rate of 5-year survival than with Western medicine as practiced today in the United States (about 4 of 15 would be expected to survive five years). Two cases were reported. One case, a 24 year old male, was treated for two years and apparently cured. The other was a 45 year old male, treated for one year and followed up for two years after treatment, apparently cured.

Hsu (4) reported on Kanpo treatment (Japanese practice of Chinese medicine) with one case study, involving a 47 year old woman who had undergone surgery for a brain tumor. Follow-up treatment with Chinese herbs appears to have restored lost eyesight and she took herbs for four years, showing marked health improvement. He also reported on a treatment given to 58 cases of brain tumors, with a topical application of raw *Clematis huchonensis* (applied as a paste near the site of the tumor for 24-36 hours; the topical blister is pierced with a needle; usually only one application is needed). Without providing details, it is reported that "all showed good results and improvement using this formula...vomiting and headaches ceased, normal leg and arm functioning returned, and convulsions ended." Unfortunately, this herb is not available in the West. In another instance of using a topical paste to the head, of 56 patients using it (plaster made from special preparation of sesame oil and lead, changed every other day), it was "effective" in 70% of cases when used for one to three months.

Of the three reports in Compendium of Secret TCM Formulas, two showed especially promising results. In one report, seven patients treated by Dr. Pan Guoxian at the Zhejiang College of Traditional Chinese Medicine all had survived 5 years or longer. In another report, Dr. Qian Bowen, at the Shanghai College of TCM, cited one, three, and five year survival rates for 213 patients that are roughly 40% higher than those described in Western literature for standard treatment. Most of his patients did not have surgery.

In the Chinese Journal of Immunology (9), it was reported that 75 post-operative brain tumor patients receiving an intravenous injection of tang-kuei and astragalus showed enhanced cellular immune function compared to 25 control patients who did not receive the herbs. The impact on survival was not indicated, but reduced immune functions (leading to life-threatening infections) are a significant risk factor for cancer patients who have undergone standard medical therapies.

None of the individual reports is highly convincing in the truncated form made available, yet, taken together they provide a picture of aggressive treatment of brain tumor with improvements occurring in several instances. Anyone who has dealt with patients undergoing standard medical therapy for brain tumor can recognize the psychological benefits of aggressive combined therapy and the desirability of the improvements that are claimed in the Chinese reports. In order to obtain such responses, the practitioner must be cognizant of the various problems that might arise in trying to administer Chinese remedies in the Western setting (8).

Blood brain barrier

The blood/brain barrier tends to keep out large molecules (MW greater than 450), including some chemotherapy agents, and non-lipophilic molecules. Of course, there are some changes in permeability that

are caused by the tumor and the immune system response to the tumor as the vessels expand and open in response to chemical signals. Do Chinese herb ingredients enter the brain? This is a complex question. First, it should be pointed out that the Chinese medical treatment of brain tumor does not rely heavily on cytotoxic agents—sometimes not at all. The balancing of yin and yang and other traditional approaches may work with the entire body system to activate healing that is mediated by a variety of mechanisms. There has been some limited study of herb ingredients that enter the brain (10); as expected, alkaloids that have a strong central nervous system effect are among them. Some of these ingredients may have antitumor properties, notably the berberine derivatives. Sesquiterpenes, such as the active components of *Artemisia annua*, used in treatment of malaria, also cross this barrier.

Trial period

Given the uncertainties surrounding treatment using Chinese medicine in the West, one might utilize Chinese herbs for a trial period of two months, seeking at the least to attain a reduction of symptoms; a reduction in tumor size may take longer—perhaps four to six months. As a general rule, surgery or radiation is not considered sufficient as a curative therapy, as residual tumor cells may reproduce and generate a new tumor mass. This is a major reason for the continued poor efficacy of the Western medical approach.

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