



Introduction of Ayurveda to Chiropractic, Building a Functional Bridge

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Abstract

Introduction: Chiropractic and the ancient system of Ayurveda share the common goal of facilitating complete and balanced transmission of life-force for the patient. A functional bridge maybe developed between the two systems to address Ayurveda's background and principles, methods of analysis and diagnostics and finally methods of treatment. The paper will finally propose relevancy for integrating a bodywork component of Ayurveda (Marma Chikitsa) into the Sacro-Occipital Technique (SOT) form of Chiropractic.

Basic Concepts of Ayurveda: Ayurveda does not treat disease rather it balances and harmonizes internal and external forces in the body so that the patient will express a "complete" life force.

Ayurveda and Chiropractic: Ayurvedic physical applications, Marma Chikitsa, may be used as a bridging point for chiropractic, and particularly SOT's chiropractic manipulative reflex technique (CMRT). This may serve to deepen the level of care with regards to better understanding etiological factors, visceral and psychosomatic implications and finally specific therapeutic techniques.

Conclusion: SOT and CMRT may make an ideal partner for interdisciplinary care; since it involves a multi-dimensional appreciation for neurophysiology, musculoskeletal as well as visceral relationships addressed in therapeutic protocols.

Keywords: Ayurveda; Chiropractic; Ancient Vedic; SOT

Introduction

Chiropractic and the ancient system of Ayurveda share the common goal of facilitating complete and balanced transmission of life-force for the patient. Chiropractic focuses on the nervous system through structural bodywork whereas Ayurveda involves a myriad of methodologies. Nonetheless, both systems view the nervous system as the primary interface for the life force that connects human beings to the cosmos. A functional bridge maybe developed between the two systems given this philosophic agreement; specifically for the purpose of integrating a deeper analytical approach to care for the Chiropractor. The following discussion will for that purpose address Ayurveda's background and principles, methods of analysis and diagnostics and finally methods of

treatment. It will also address current scientific and medical research that recognizes the scientific basis of Ayurveda and serves to conceptually bridge Ayurvedic knowledge for advancements in modern medicine and sciences. The paper will finally propose relevancy for integrating a bodywork component of Ayurveda (Marma Chikitsa) into the Sacro-Occipital Technique (SOT) form of Chiropractic.

Basic Concepts of Ayurveda

Ayurveda means "Science of Life" and as the world's ancient healing system dates back some 5,000 years. Health in Ayurveda is considered a state of balance between body, mind and psyche that parallels the biological constitution at the time of birth (Prakriti Dasha or prototype). Dasha

is considered genetic makeup but is largely influenced by environmental interactions. Ayurveda addresses all aspects of life ranging from daily to seasonal regimens and utilizes a diverse methodology of treatments including diet, herbs, bodywork, Yoga/meditation and more. Ayurveda treats the mind-body-spirit of the patient in a manner that considers all three inseparable and mutually influential. It further considers development of consciousness as a principle objective in the maintenance of health and advocates patient participation beyond the clinical setting. Like Chiropractic, Ayurveda does not treat disease rather it balances and harmonizes internal and external forces in the body so that the patient will express a complete life force.

Ayurveda emerged from the ancient texts of India whose religious expression was largely cosmological (**Textbox 1**). The enumeration of unmanifest (Avyakta) to manifest (Vyakta) described in these texts, as the creation process, explains how the human body and mind as well as all matter is a manifestation of interactions between five elements

Elements	Form of energy	Physiological Role	Mental Function
Ether (Akasha)	Nuclear	Auditory	Distinguish between right and wrong
Air (Vayu)	Electrical	Tactile, Circulation	Impulse and movement
Fire (Agni)	Radiant	Digestion, Metabolism	Objective perception
Water (Jala)	Chemical	Taste	Flexibility and emotion
Earth (Prithivi)	Mechanical	Olfaction	Resistance

Table 1: Pancha Mahabhuta.

The Pancha Mahabhuta organize into three specific functions recognized as requisites for any living system: ether and air form Vata Dosha (input-output); fire forms Pitta Dosha (throughput or metabolism); and water and earth form Kapha Dosha (storage). These relationships of input-output, throughput and storage determine regulative behavior at cellular, physiological, systemic and mental levels thus maintaining micro/macroc cosmic consistency in Tridosha Theory [1,2]. Harmonic balance between these elements as they form the Doshas results in health. Ayurveda uses the terms Prakriti to mean primal nature in both the cosmological sense as well as individual biological constitution. As each cell and system is composed of varying amounts of the Pancha Mahabhuta; cells, systems and ultimately the individual is recognized as having Doshic predominance. In this manner Ayurveda establishes Prakriti Dosha as Biopsychological prototype for individuals.

Since Pancha Mahabhuta and Tridosha are considered cosmological expressions in their intangible forms (**Textbox 2**). Ayurveda observes the human body and all of its processes as a reflection of the universe. Health is achieved by restoring and maintaining functioning of the Doshas to their Prakriti

(Pancha Mahabhuta). The states of matter are Ether, Air, Fire, Water and Earth and they form the human body in different combinations giving basis for the Ayurvedic theory of Tridosha (Table 1).

➤ **Textbox 1:** The roots of Ayurveda are found in the ancient Vedic texts: Rig Veda, Sama Veda, Yajur and Artha Veda. Ayurveda is considered an upaveda or subsystem within the Artha Veda. Although these texts are believed to be more than 10,000 years old, the Charaka Samhita dated 400 C.E. is the oldest known Sanskrit text that deals specifically with Ayurveda. Samkhya is the cosmological science of the Vedas and enumerates the principles of the universe, the dynamics of which Ayurveda employs as an expression for restoring and maintaining health. Samkhya in Sanskrit can be dissected into two words mean Truth (San) and to realize or know (Khya). The Samkhya background gives Ayurveda its unique orientation of establishing health by mirroring balance of the human body and mind with that of the universe.

(birth state), eliminating all factors that distort this reflection. The Doshas comprise the human body along with the dhatus (tissues), malas (wastes), gunas (psychological forces) and srotas and nadi (physical and energetic channels).

➤ **Textbox 2:** Samkhya delineates a series of 24 developmental stages in the creative process in which the Pancha Mahabhuta are a gross manifestation or end stage for the transmission of sensation and expression of physical structures.

Prakriti examination is a central concept in Ayurveda. It classifies the phenotypes of individuals based on the predominant Dosha at birth, which in turn expresses specific physical, physiological and mental traits- biopsychological prototype. Each person is a unique product of genetic, environmental and psychological factors that influence and alter the equilibrium between Doshas. Vikruti is the term given to doshic imbalance and the disease state that results from maladaptation in input-output, throughput and storage systems. Recognition of Prakriti Dosha and point of deviation (Vikruti) due to changes in the Tridosha is unique to Ayurveda giving specific reference to distortion patterns

at cellular, physiological, systemic and mechanical levels. No other health discipline utilizes this concept. Indian scholars in recent years have begun to research the concept of Dosha Prakriti as it pertains to the human genome, a project serving to establish full scientific basis to Tridosha and Ayurveda [1,2]. The following will briefly discuss the Tridosha in regards to attributes, physiology, visceral and systemic roles as well as psychological expression.

Vata

Vata means air, “that which moves” and is responsible for mobility and motility. Composed of ether and air, Vata is the input-output principle acting as the motivating force

and animator of the other two Doshas. Its attributes are dry, cold, light, rough and agitated. Vata governs the central, autonomic and peripheral nervous systems and all forms of physiological and systemic movements including membrane transport, respiration, ingestion, ejection, assimilation, circulation and elimination. Vata resides in the colon, pelvic girdle, bones, thighs and the organs of hearing and touch. Vata’s primary site of aggravation or disease is the large intestines. Prana is the animator of Vata, its subtle force which in turn animates all other systems. Disorders of Vata involve neurological conditions [3,4]. Frawley [3] and Lad [4] provided textual information on the Doshas and their features. The information presented unless otherwise cited is based on their works (Table 2).

Forms of Vata	Element	Location	Function
Prana	Ether	Central nervous system	(1)Governs higher cerebral activities including respiration, thinking and feeling. (2) Transformation of optical and auditory input from sensation to feelings, emotion and finally thought. (3) Controls the other vatas.
Udana	Air	Chest, diaphragm, nasal and pharyngeal passages	(1)Exhalation, coughing, vomiting, sneezing. (2)Initiates efforts and upward movements (3) Involved in memory recall, speech and self-realization.
Samana	Fire	Abdomen	(1) Involved in the mechanical processes of digestion, absorption, assimilation and movements of chyme within and between chambers.
Vyana	Water	Heart	(1) Maintains arterial, venous and lymphatic circulation. (2) Responsible for physical movements and activities controlling voluntary and involuntary movements, especially at the joints.
Apana	Earth	Lumbo-sacral, inguinal, genito-urinary and gluteal regions	(1) Governs downward movements of defecation, flatulence, urination, ejaculation, parturition and menstruation.

Table 2: Forms of Vata.

Pitta

Pitta is the fire humor and means “that which digests.” Indeed Pitta as the throughput function is responsible for all

chemical and metabolic processes. It additionally regulates mental digestion i.e. from sensation to thought, emotion and discrimination of reality.

Forms of Pitta	Element	Location	Function
Sadhaka	Ether	Heart, gray matter of the brain and synaptic spaces	(1) Governs normal functions of memory, cognition, comprehension, awareness. (2) Digests perception into thought.
Alochaka	Air	Eyes: retina, lens, cornea, iris and optic disc	(1) Regulates vision
Pachaka	Fire	Stomach and small intestines	(1) Digestion, absorption and assimilation by enzymatic activities.
Ranjaka	Water	Liver, spleen, intrinsic factor and blood	(1) Hematological activities: hematopoiesis, preservation and destruction. (2) Production of bile, liver enzymes, cholesterol, hemoglobin. (3) Gives color to the eyes, blood, urine and feces.
Bhrajaka	Earth	Skin and subcutaneous tissue	(1) Regulates skin temperature, moisture-sebaceous secretions, pigment, vasomotor function and tactile perception.

Table 3: Forms of Pitta.

Pitta is composed of fire and water and is hot, sharp, light, oily, mobile and liquid. Pitta functions in digestion, oxidation-reduction, conjugation, phosphorylation, enzymes and hormones [5]. The major sites of Pitta are the stomach, duodenum, liver, spleen, pancreas, heart, eyes and skin. The main site of disease for Pitta is small intestines. Disorders of Pitta involve digestive, metabolic and enzymatic conditions (Table 3).

Kapha

Kapha though translated as phlegm means “that which holds things together.” Composed of water and earth, Kapha is the storage function and is responsible for maintaining moisture, lubrication, insulation and providing support

to tissues and systems. Kapha makes up the bulk of bodily tissues. Its qualities are wet, sticky, cold, heavy, dull, soft and firm. Kapha resides in the chest, throat, head, pancreas, stomach, flanks, lymph, plasma, adipose, nose and tongue. Its function resembles the lymphatic and immune systems, adipose, mucus and mucoid systems [5]. The main site of disease for Kapha is the stomach. Disorders of Kapha involve problems related to lipid metabolism as well as mucus secretion. Vata governs the functions of both Pitta and Kapha. Pitta requires the lubrication and insulation provided by Kapha or else the body would burn up. Kapha requires Pitta to continuously utilize its materials or else the body would congeal over. Each Dosha is required for the functioning of the other. Deficiency or excess of one impairs all systems causing a breakdown in self-regulation (Table 4).

Forms of Kapha	Element	Location	Function
Tarpaka	Ether	White matter of the brain, myelin, cerebrospinal fluid, interstitial fluid, mucosa of nasal and sinus cavities	(1) Nourishes and protects the nervous system via CSF and myelin sheath. (2) Stores memory and experience
Avalambaka	Air	Chest, lungs, pleural fluid	(1) Regulates moisture and lubrication of alveoli (2) Facilitates the functions of the other Doshas by providing sufficient moisture and lubrication.
Kledaka	Fire	Stomach and upper GI	(1) Liquefies food (2) Forms the protective mucosal linings of the GI (3) Maintains pH equilibrium
Bodhaka	Water	Oral cavity and saliva	(1) Lubricates the oral cavity and throat (2) Taste perception (3) Aids in mastication.
Sleshaka	Earth	Synovium of joints and periosteum	(1) Lubricates joints.

Table 4: Forms of Kapha.

Dosha as Biopsychological Constitution

All individuals are composed of the same biomaterials; however people have a predominance of one or two of the Doshas. Rastogi and Chappelli state that Ayurveda proposes to identify Dosha predominance already in the developing fetus [1]. Thus Prakriti Dosha or birth constitution is determined prenatally. Tridosha categorizes biopsychological constitution types for individuals, establishing a prototype return point for the physician to accurately address deviations in function and etiological relationships. There are seven possible Dosha combinations: Vata, Pitta, Kapha, Vata-Pitta, Vata-Kapha, Pitta-Kapha and Vata-Pitta-Kapha. The three pure Doshas can be described in terms of physical features, metabolism, emotional predisposition as well as other characteristics.

Additionally, the Doshas are predisposed to specific

types of medical conditions or symptoms. Reflection upon the dominant element in the Dosha helps to explain this phenomenon. Vata is composed of ether and air. Its features and clinical disposition are light, inconsistent, ungrounded and desiccated; all of which are effects of the wind. Pitta, composed of fire and water, is well balanced in metabolism and physique. Disorders and conditions common to Pitta normally reflect excess of metabolic activity resulting in febrile and inflammatory conditions. Pitta is passionate and assertive in both positive and negative ways. Whereas Vata psychologically is ungrounded with anxiety, Pitta is impatient, angry and hostile. Kapha as earth and water is stable and grounded giving consistency and dependability. Earth gives Kapha a large and broad physique but also attracts accumulation of tissue and adipose. Kapha has an attached personality and tends towards greediness, depression and being emotional (Table 5).

Physical Characteristics	Metabolism	Psychological	Common Conditions and Disorders
<i>Vata types are shaped by the wind</i>			
Thin light weight; difficult to hold weight; poorly developed physique; skin that is thin, dry and cold; prominent veins; dull complexion; receding gums; thin and visible joints; unsteady joints with crepitus.	(1) Erratic and variable appetite (2) scanty and colorless urine that passes with difficulty, (3) scanty and hard stool that passes with difficulty, prone to constipation, (4) irregular and general lack of sweat	Fast to act; adaptable; changes easily; erratically talkative; indecisive; learns and forgets quickly; artistic, esoteric, shy, sensitive, enthusiastic, fearful, anxious and nervous, hysteria and trembling, anxiety.	Dry skin, constipation, irregular appetite and metabolism, receding gums, cramps, flatulence, shivering, stuttering, insomnia, neuroticism and paranoia. More substantial diseases involve rheumatism, nervous disorders, sciatica, osteoporosis, poor blood circulation, irregular menstruation, anorexia and suicidal tendencies.
<i>Pitta types are fiery and have a tendency to burn</i>			
Body of medium stature with well-developed muscles; strong and constant metabolism; ruddy or glowing complexion; warm and moist skin; prone to baldness.	(1) Strong appetite, (2) profuse brightly colored and perhaps burning urine, (3) abundant and loose stool, burning, sometimes yellow in color, with tendency towards diarrhea (4) profuse hot sweat with strong odor	Adaptable to change but need convincing; argumentative, assertive and passionate; critical and penetrating, sharp memory; impatient, angry and irritable; temper and rage and tantrums.	Ulcers, stress related disorders, diarrhea, thrombosis, inflammatory disorders (lymph system and spleen), hepatitis, infectious diseases, febrile conditions, urinary tract infections and jaundice.
<i>Kapha types are grounded in the earth and tend to stagnate</i>			
Large or full body physique; tend toward obesity; strong bones and teeth; thick hair; thick, moist and cold skin; pale complexion, high physical endurance but need to be pushed to be active.	(1) Constant yet low appetite, (2) moderate and whitish colored urine, (3) moderate and solid stool, sometimes pale with presence of mucus, (4) moderate and cold sweat.	Very difficult to break old habits; slow and reserved; dull; slow learner but does not forget; tranquil and sentimental; laziness and lethargy; patient; polite; dependable; generous; may have a tendency for materialism and greediness; are attached; depression and indifference.	Conditions that are cold, mucosal and stagnating in nature including respiratory disorders, nausea, colds, asthma, tumors, fungal infections, edema, swollen lymph nodes, diabetes, bronchitis, goiter, digestive problems and obesity.

Table 5: Explaining about vata, pitta, kapha.

Interestingly, in Ayurveda one Dosha is not considered better than the other. They all have neutralizing qualities. For example, when it comes to health Vata types are most prone to illness. However, they recuperate the fastest and have the qualities of change and transformation to facilitate the healing process. Kapha individuals have the strongest immunity, but experience the longer and more difficult recovery times once they succumb to illness.

Mental Components (Gunas)

In addition to the Doshas, Ayurveda recognizes three mental components called Gunas that reflect spiritual disposition.

1. **Sattva** gives qualities of truthfulness, harmony, generosity, selflessness, etc. It is the principle of intelligence and illumination.
2. **Rajas** give qualities of self-motivated ambitions, ego, pride, untruthfulness, distraction etc. Rajas are the principle of motion or energy.
3. **Tamas** gives qualities of dull intellect, laziness, attachment and greed, perversion, evil, materialist. Tamas is the principle of materiality.

The Gunas are utilized in the construction of mental constitution charts in combination with the Doshas. This serves in the process of evaluating non-physical etiologies and guides the process of general therapeutics as well as

ethical/spiritual development facilitated in Ayurveda.

Tissues and Wastes (Dhatus and Malas)

Seven levels of tissues (Dhatus) are recognized in Ayurveda and are considered the sites of disease. They are listed from most gross to subtle: plasma (rasa), blood (rakta), muscle (mamsa), adipose (medas), bone (asthi), marrow or nerve (majja), and reproductive tissues (shukra). Tissue formation occurs when Agni or fire (digestive fire) processes a portion of gross tissue to the next one in line. Plasma forms blood which forms muscle and so on establishing self-nourishing cycle. Ultimately reproductive tissue, which is the most subtle or essential, produces Ojas (the immunity and vitality factor of life) and gives rise to new plasma.

It takes 5 days for plasma to be formed, and then another 5 days for plasma to form blood. Thus 35 days in total to form the reproductive tissue. This helps to explain the long term dietary therapies used in Ayurveda in rejuvenation therapies. Also, each Dhātu gives off certain waste products, is responsible for specific psychological functions and is associated with a specific Dosha. For example:

Asthi Dhātu (bone) is composed of earth and air and its porosity makes it a site for Vata. Asthi provides support and foundation for the body giving confidence and security. The teeth constitute its secondary tissue. In excess Asthi causes osteophytes, too large a frame, joint pains, arthritis, and emotions of fear and anxiety. When deficient, Asthi causes frailty, joint pain, and insufficient bone formation, loss of teeth, hair and nails.

Ayurveda further utilizes a concept of fire (Agni) that is responsible for both digestion and absorption of nutrients (Pakwagni) and as well their assimilation into 7 different levels of tissue (dhatwagni). Fourteen different channel systems (Srotamsi) facilitate input-output with the external world, supply the tissue systems and their communications and carry mental processes. They are activated by Prana and Ojas (vital essence). The Ayurvedic classics state "Srotomayam hi Shariram," that the living body is a system of channels gross and subtle, tangible and intangible, biologic and energetic; and that all life processes depend on the integrity of their function. Pathogenesis observes Doshic imbalances and the impairment of Srotas and Dhatus in

determining etiologies, expression of disease and its stages [6].

Pathogenesis (Samprapti)

The "Land and Seed Theory" used in Ayurveda explains that the body and mind are as soil and disease the seed. When the physiology of the soil is maintained then the seed cannot germinate and take root [7]. Imbalance in Doshas, Srotas and Dhatus in addition to the mind constitutes a loss of physiological integrity allowing any seed to take root. Thus health in Ayurveda is combination of these balanced factors along with environment [5]. Prajnaparadha, which means "failure of wisdom", is considered first step involving that compromise. Indeed it means the result of not attending to innate intelligence and natural law [8].

Considering requisite functions of input-output (Vata), throughput or metabolism (Pitta) and storage (Kapha) for the existence of any living system, diagnosis begins by investigating disturbance of Dosha. Pathogenesis (Samprapti) is an evaluation of the stages of disease development with respect to deficits, excesses or qualitative disturbances in the sites of the Doshas [9]. It additionally traces etiological factors through specific disease pathways and observes distinct symptomology. Etiological factors are physical, mental and environmental. Equal attention is given to the relationships between patient and factors in determining etiologies.

Ayurveda designates six different stages of pathogenesis: They are Sanchaya (accumulation), Prakopa (provocation), Prasara (overflow), Sthana samsraya (deposition), Vyakti (manifestation) and Bheda (differentiation). The disease process begins when a Dosha is increased by an aggravating factor weakening Agni (the digestive fire). As a result undigested food mass (Ama) begins to accumulate. Together Ama and the aggravated Dosha accumulate and eventually start to block the Srotas and begin migration to a weakened site. In this case the Dosha is both the effected system and an etiological factor.

- **Sanchaya** is the first stage of etiology and involves primary aggravating factors in which the Dosha as a vitiating force begins to accumulate in its home site (Table 6).

Vata	Accumulates in the colon and presents as bloating and abdominal distension
Pitta	Accumulates in the small intestine and presents as hyperacidity and indigestion
Kapha	Accumulates in the stomach and presents as distension, heaviness in the epigastrium and tiredness following meals

Table 6: Sanchaya.

- **Prakopa** is the second stage and occurs when the accumulated Dosha now provokes the home site causing various local and systemic effects (Table 7).

Vata	Constipation, distension and respiratory difficulty
Pitta	Nausea, periumbilical pain, vomiting and acid reflux
Kapha	Lack of appetite, mucus build up and congestion, belching and hypersalivation

Table 7: Prakopa.

- **Prasara** is the third stage and occurs when the accumulated Dosha begins to overflow into the plasma and blood and spreads out into the rest of the gastrointestinal tract. The toxic Dosha now can penetrate other organs (Table 8).

Vata	Dry skin, cold extremities, joint stiffness, lower back pain, heart palpitations, spasm, convulsion, headache, dry cough, tinnitus, constipation and difficult bowel movements, insomnia, anxiety and nervousness.
Pitta	Inflammatory dermatological conditions, conjunctivitis, gingivitis, GERD, dizziness, headache, high fever, bilious vomiting, burning diarrhea, irritability and anger
Kapha	Sinus congestion, dyspnea, swollen glands, low fevers, vomiting, joint swelling, edema and mucus in the stools

Table 8: Prasara.

- **Sthana samsraya** involves relocation of the Dosha from the circulatory system to a tissue. The tissue is generally a weakened site and is called Khavaigunya. The symptoms begin to remain fixed in location as well (Table 9).

Vata	Cold, dryness, dry cough and sneezing
Pitta	Irritations, infections, inflammatory conditions and ulceration
Kapha	Congestion, edema and mucus formation

Table 9: Sthana samsraya.

- **Vyakti** is the stage in which Doshas manifest as clinical symptoms such as asthma, diabetes, rheumatoid arthritis and so on (Table 10).

Vata	Radiating pain, debility and fatigue, emaciation, stiffness and muscle wasting, spasm and tremors
Pitta	The same its previous stage in addition to throbbing pain
Kapha	Obesity, metabolic changes, dull pains and gall and kidney stones

Table 10: Vyakti.

- **Bheda** is the final stage in which the attributes of the Dosha are clearly reflected in the clinical symptoms (e.g. Pitta arthritis will present with fever, burning sensations, inflammation and loose stool) (Table 11).

Vata	General lack of function, osteoporosis, wasting, paralysis and deformity
Pitta	Perforation and ulceration, abscesses, hemorrhages and gangrene
Kapha	Profuse edema, stagnation, neoplasia, and arterial obstruction and occlusion

Table 11: Vyakti.

Diagnosis / Inspection

The Charaka Samhita states that it not possible to name every disease because each individual is distinct in clinical

presentation and manner of treatment. Although Ayurveda observes and identifies nature of the disease, i.e. symptoms it is more concerned with the imbalance of Doshas that produce the symptoms and are in need of correction. Still Ayurveda

does refer to common diseases by names that correlate clinically with those of the west [10]. Distinguishing between the examination of the disease (Roga Pariksha) and patient (Rogi Pariksha) helps to form a tailor made management plan for the patient. Patient examination consists of Prakriti, disease (Vikruti), age (vaya), tolerance (satmya), mental state (satva), metabolism (aharashakti), physical endurance (vyayama shakti), tissue quality (sara), physical proportions (sanhanana) and finally strength (bala) [1].

The primary methods of diagnosis in Ayurveda are observation/inspection, palpation and history. Additionally Ayurveda utilizes a sophisticated analysis of pulse, urine, stool, eyes, tongue, skin, speech and voice as well as general appearance [5]. Marmani or vital points are also palpated for sensitivities to determine disturbance of Dosha. For example tenderness upon initial pressure that rapidly recedes indicates Vata disturbance. Tenderness felt throughout medium pressure indicates Pitta disturbance and tenderness only felt on deep pressure indicates Kapha disturbance. There are 117 total marma points and they each have unique physiological, visceral and psychological correlations, thus they can be used to determine various sites and levels of dysfunction [8]. Use of Marmani is of central importance to the later discussion for integrating their application into clinical SOT.

Therapeutic Methodologies

Disharmony of Pancha Mahabhuta cause imbalance of Dosha leading to maladaptation in regulative systems. Ayurvedic healthcare addresses the Doshas and Gunas (mental components) on multiple levels to restore balance. This involves eliminating etiological factors and toxins, clearing Srotamsi (channels) and restoring normal balance of Pancha Mahabhuta in accordance with Prakriti Dosha [1]. Treatments are distinguished as reducing or tonifying. The general rule behind therapies in Ayurveda is to eliminate toxins and their factors before tonifying the body.

- **Reduction therapies** serve to eliminate Ama or toxins, aggravated Doshas, as well as environmental or lifestyle factors- addressing etiological components. This form of treatment is indicated in acute stages of disease and involves practices of discipline, giving things up and changes in lifestyle which promote self-inquiry for eliminating etiological factors [3,8]. Four main factors are involved in this process: cleansing (Shodhana), palliation (Shamana), rejuvenation (Rasayana) and mental-spiritual healing (Sattvavajaya) [5]. Cleansing is commonly the first step and it involves Panchakarma and Shamana.
- **Panchakarma** is the better known practice of cleansing

and detoxification in Ayurveda. It utilizes five different techniques including *basti* (medicated enemas), *virechana* (therapeutic purging), *vamana* (therapeutic vomiting), *nasya* (application of medicated oils and powders to the nostrils) and finally *rakta moksha* (therapeutic release of toxic blood). The Shodhana stage serves to remove Ama and accumulated Doshas from sites present in organs, channels, marmani (vital points) or other weakened sites.

- **Oleation and sudation** therapies are normally applied prior to Panchakarma and involve softening and liquefying of the Ama and the Doshas and directing their withdrawal to the gastrointestinal tract to be removed using Panchakarma techniques.
- **Shamana** or palliation therapies are performed when the body is not strong enough to receive Panchakarma and the Doshas are not “ripe” enough to be expelled. It too is performed to reduce Ama but does not dispel the Doshas. The idea here is that sufficient toxins have accumulated and their removal might exacerbate the condition. Shamana has seven parts: herbs for burning toxins and stimulating digestion; fasting; fasting from water; Yoga exercise and meditation; sun and moon bathing; exposure to wind [3].
- **Lifestyle changes:** based on daily regimens and seasonal changes according to Dosha requisites.
- **Tonification therapies** are designed to nourish debilitated systems and tissues whose deficiencies were responsible for disease. Tonification methods are indicated in chronic diseases, malnourishment as well as after reduction therapies have been performed.
- **Rasayana** is a form of rejuvenation and revitalization performed once toxins have been removed from the body and serves to restore the body’s innate intelligence and maintain optimal function [8]. In fact the term can be broken into two parts: *Rasa* meaning nutrition and *Ayana* meaning transportation into the body. Rasayanas serve to improve the nutritional value, improve digestion, bioavailability, microcirculation and assimilation. The practices involved are analogous to the modern use of dietary supplements [5]. Rasayana utilizes herbal formulas, *bhasmas* (mineral preparations) as well as forms of bodywork.

Additional therapies used in Ayurveda include Yoga and massage. The massage or bodywork component, more specifically Marma Chikitsa, is of primary interest to this paper. Marma Chikitsa is the use of vital points found on the different body tissues and junctions to treat diseases

strengthen the body as well as evaluate severity of condition. More specifically, it can be used to treat doshic imbalances; dhatu and strotas disturbance; visceral dysfunction; imbalances in Prana, Tejas and Ojas; pain relief by stimulating Agni and eliminating or detoxifying Ama; calm the mind and emotions; enhance awareness and serves as a form of preventative care. Marma Chikitsa is utilized in both reductionist and tonifying treatment programs.

Diet and lifestyle form a pillar of Ayurvedic care inside and outside the clinical setting. Diet and herbs are recommended to patients based on the principle of taste. Ayurveda considers six different tastes based on elemental combination: sweet – earth and water; sour-earth and fire; salty – fire and water; pungent-fire and air; bitter-air and ether; and astringent-ether and earth. Foods, spices and herbs are applied based on relationships of opposites. Each Dosha is composed of, relieved by and aggravated by different elemental combinations. Herbal treatments are utilized based on principles of taste (rasa), properties (guna), energetics (virya), post digestive properties (vipaka) and special effects (prabhava). *Bhasmas* or mineral herbal formulas are also utilized in different stages of care. These are well known for the uses of oxidized minerals such as gold, copper, mercury, zinc, diamond and others in special herbal formulas.

Ayurveda does not contain a concept of specialization as is common in western medicine. This is because the Ayurvedic physician treats the whole person and all systems and levels, not a specific organ, etc [4]. Nonetheless even though an Ayurvedic physician may specialize in a particular field e.g. ophthalmology he or she will treat the entire body and mind in order to correct and eliminate etiological factors.

Ayurveda and Modern Science and Medicine

Ayurveda has been gaining global attention and interest in the last decade due in part to its holistic approach in therapeutics; that fact that it is among the most extensive and profound conceptual bases within Traditional Medicine Systems (TMS) around the world; and because it has survived for more than 2 millennia as a vibrant medical system [5]. In the inaugural speech for the World Ayurveda Conference held in University of Pune in 2006, Dr. R.A. Mashelkar, Director General of India's Council of Scientific and Industrial Research (CSIR), announced that India can benefit enormously if it builds a Golden Triangle between modern science, modern medicine and traditional medicine [11]. The purpose being to blend both modern and traditional synergistically to provide accessible and affordable health care to all people of the planet⁷. Later in 2009 the First International Congress on Ayurveda held in Milan featured experts from fields in both Ayurveda and modern science that fostered relationships

between disciplines involving themes such as quantum physics, epigenetics and modern medicine [6].

Researching the scientific basis of Ayurveda is a new academic field pursued in India, serving to integrate Ayurvedic methodologies into allopathic practices in response to short comings as well as to express the principles of Ayurveda in scientific terms in Ayurvedic schools of India. Excitingly, both Indian allopathic and traditional institutions have shown reciprocating interests. Ayurveda schools in India have been “urging for scientific rooting of Ayurvedic principles” [9]. Additionally, medical institutions, primarily motivated with pharmaceutical interests, have been conducting research in the Ayurvedic field of Dravyaguna (herbalism) to benefit modern allopathic treatments.

Research performed by the CSIR in Ayurveda has been conducted primarily with respect to future pharmaceuticals; cataloguing and investigating the pharmacopeia of Ayurvedic herbal wisdom for identifying biochemical agents at work. Such medical studies have been conducted to evaluate the effectiveness of Ayurvedic herbal wisdom in treating chronic and degenerative disorders including depression, anxiety, sleep disorders, hypertension, diabetes mellitus, Parkinson's, and Alzheimer's disease [10].

Other scientists and physicians of both allopathy and Ayurveda have undertaken a mission to present Ayurveda in scientific terms to establish a formal bridge between disciplines. Dr. Lakshmi Mishra's compendium “Scientific Basis for Ayurvedic Therapies” (2004) and Rastogi's article “Building Bridges Between Ayurveda and Modern Science” (2010) as well as other articles are invaluable in that respect^{5,9}. Studies of Tridosha and Prakriti have shown their relevancy in explaining processes of cellular differentiation, gene expression and ultimately genomes and phenotypes. These studies have opened the door to future research regarding epigenetics and their role in environmental or diet related susceptibilities to pathology [1,2]. The Oxford journal Evidence Based Complementary and Alternative Medicine (eCAM) has also contributed numerous articles in discussion of Tridosha and Ayurveda for scientific validity [12].

Ayurveda and Chiropractic

Dr. Betsy Singh former Dean of Research at Los Angeles Chiropractic College (LACC) along with Dr. Lakshmi Mishra published an article on the use of Ayurvedic therapies for treating arthritis. The article enumerated the Tridosha theory in determining Prakriti Dosha for patients and addressed specific herbs along with diet, lifestyle and Dosha indicated yogasanas [13]. In 1999 Singh established an Ayurvedic medicine research track at the LACC to perform studies on the effectiveness for using Ayurvedic herbs in treating

conditions such as osteoarthritis, TMJ and fibromyalgia in conjunction with Chiropractic. Singh stated that “Ayurvedic therapies interface nicely with Chiropractic, with their shared emphasis on wellness, prevention, lifestyle and belief in the body’s innate capacity to heal itself” [14].

Her article “Ayurveda: Good Chiropractic Partner?” truly sets the stage for exploring the possibilities of blending Ayurveda and Chiropractic. It is common place that Ayurvedic therapeutics and its contributions to healthcare discussed in other disciplines are equated almost entirely with herbs (Dravyaguna), which represents a small fraction of the types of therapeutics provided [15]. Interestingly, the therapies and methodologies discussed in Singh’s article did not touch upon Ayurvedic forms of bodywork, specifically Marma Chikitsa. As Chiropractors, it makes sense to utilize Ayurvedic physical strategies in synergy with adjusting. Much research has been performed on Ayurvedic herbalism and its applications in both allopathic and holistic clinical settings. This project will now propose relevancy for integrating Ayurvedic science and its physical applications namely Marma Chikitsa into the Chiropractic field. This may serve to deepen the level of care with regards to better understanding etiological factors, visceral and psychosomatic implications and finally specific therapeutic techniques. This process will not only supplement the level of Chiropractic care, but retain essence of Chiropractic as its ultimate goal is to facilitate unimpeded transmission of life force.

Sacro-Occipital Technique (SOT) with its branch of Chiropractic Manipulative Reflex Technique (CMRT) utilizes somatovisceral and viscersomatic reflex diagnosis to aid diagnosis and therapeutic applications. CMRT utilizes various organ involvement, investigates laboratory analysis testing (e.g., blood, urine, saliva, etc.), and can utilize other types of interdisciplinary diagnostic tools. Aside from co-treatment of patients with musculoskeletal or radicular pain, in 2010 a study [16] illustrated how chiropractic and acupuncture theory can work together to help treat a patient presenting with non-musculoskeletal conditions.

If acupuncture theory and principles along with CMRT can help diagnose and treat patients with non-musculoskeletal conditions it is reasonable that incorporating Ayurvedic principles and theory might also facilitate patient care. Since it is unlikely that one form of healing has all the answers, weaving the theoretical tenants of chiropractic, acupuncture and Ayurveda may help complementary alternative medicine practitioners better serve patients in need. The discussion presented in this paper can be used as a bridging point for Ayurveda its Marma Chikitsa, chiropractic, and particularly SOT’s CMRT. SOT and CMRT may make an ideal partner for such cross-pollination; since it involves a multi-dimensional appreciation for neurophysiology, musculoskeletal as well

as visceral relationships addressed in therapeutic protocols. Recently, SOT is espousing a unique philosophy of enhancing patient recovery and health by building relationships with other disciplines [17,18].

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