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Hydrotherapy A New Trend in Disease Treatment

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ABSTRACT

Water has been used by human being for centuries for health relaxation, relief of pain, and treatment of many ailments. The baths utilized by ancient civilizations such as the Romans, Greeks, Babylonians, Egyptians, Chinese, and Japanese are well documented. Hydrotherapy (water therapy) refers to the medicinal use of water, including hot tubs, cold water treatments, ice packs, vapors, saunas, mineral springs, hot springs, sitz baths, wet towel applications, water exercises, and water massage. Hydrotherapy practice in physiotherapy has developed from a scientific basis of hydrodynamic theory. An understanding of the physical properties of water and the physiology of human. Positive effects of hydrotherapy were experienced on physical function, energy, sleep, cognitive function, ability to work and participation in daily life. Further controlled studies are needed.

INTRODUCTION

Water has been used by human being for centuries for health relaxation, relief of pain, and treatment of many ailments. The baths utilized by ancient civilizations such as the Romans, Greeks, Babylonians, Egyptians, Chinese, and Japanese are well documented. These ancient ancestors advocated the healing effects of water. We are still utilizing water today as a therapeutic modality. Massage therapists, physical therapists, physiatrists, and other specialists, employ water in their practices for treatment and pleasure. Hydrotherapy (water therapy) is a natural way for massage therapists to expand their practice and utilize techniques that have been proven over the centuries. [1]

Hydrotherapy has been used for thousands of years. Proto-Indian culture made use of hydrotherapy as far back as 2400 B.C. [2]. As early as 1697, Sir John Floyer wrote a treatise on the use of hydrotherapy involving hot and cold water [3]. While other uses of hydrotherapy involved medicinal remedies, in World War I and II hydrotherapy was used for maintenance of fitness [4]. In recent years, hydrotherapy has become an integral part of physical therapy. Hydrotherapy has been attributed to promoting muscle relaxation and increasing tissue temperature and tissue blood flow [5]. Three types of hydrotherapy can be used: neutrotherapy, thermotherapy and cryotherapy the difference being the varying temperature of the water. Thermo-hydrotherapy is defined as the application of water to an immersed body at a temperature above skin temperature. Immersion in a water bath has been shown to be far more effective in increasing tissue temperature than hot packs, diathermy, or even ultrasound [6]. Water is a very efficient way to warm tissue because of its high specific heat and thermal conductivity. It also provides a good medium for therapeutic exercise due to the buoyancy provided to the body reducing weight on joints [6].

The term Hydrotherapy ('hydro' meaning water) refers to a process which uses water at any temperature or forms to relieve pain and treat illness and is a practice which has been in use since the 5th century B.C. It was Greek physician Hippocrates who first cited the use of water for therapeutic purposes, but its medicinal merits did not go unnoticed by ancient Egyptian or Roman civilizations either. Egyptians were said to have bathed in flower essences and aromatic oils and historical evidence prove that public baths were a central feature of roman colonies. The middle Ages brought about a revival as physicians began using sulfur-rich springs for the treatment of skin complaints and other ailments. Come the 18th century hydrotherapy was recognized as a scientific method and physicians were commonly utilizing

the healing properties of water for the treatments of illness. Hydrotherapy may help treat various conditions, including arthritis, stomach issues, sleep disorders, stress and depression. The theory behind hydrotherapy is that water has healing properties that can relieve various ailments and conditions. In its different forms ice, liquid, and steam water is a versatile treatment method [6].

Properties of Water

The properties of water are:

Colorless

Odorless

Tasteless

Water exists in three states:

Solid (does not flow)

Liquid (flows freely)

Vapor (flows freely and fills all dimensions of is containers)

The fact that water exists in the three above states within a relatively narrow range of temperature enhances its therapeutic versatility. Water is readily accessible and can be applied by the massage therapist with very little expense. Water can absorb large amounts of heat and is an excellent conductor of heat [7].

In hydrotherapy, the environment of the body is changed by water at varying temperatures and by various mechanical means. In general, the physiological response of the body is directly proportional to the extent of the environmental change. Physiological changes in the body produced by hydrotherapy are classified as thermal, mechanical, and chemical.

Thermal effects are produced by water at temperatures above or below that of the body. The greater the difference, the greater the physiologic effect.

Mechanical effects are produced by the impact of water touching the skin in whirlpools, sprays, douches, and friction.

Chemical effects are produced when water is taken orally or as an irrigation of some body cavity.

Maintenance of a stable internal environment or homeostasis is essential for good health. Cell and tissue components constantly wear out and must be replaced to keep the body's internal environment within normal limits. Water is a major component of this process. Although the body appears to be a solid object, it is not. Water makes up 65 to 70% of the lean body mass of an average adult, and about 70% of an infant's body weight. Body water is distributed between intracellular and extracellular fluid. In order to preserve this homeostasis, the body must constantly make physiological adjustments to environmental influences. The body temperature is the difference between the amount of heat produced by the body processes and the amount of heat lost to the external environment [7].

The hypothalamus, located between the cerebral hemispheres, controls body temperature the same way a thermostat works in the home. A comfortable temperature is the "set point" at which a heating system operates. In the home, a fall in environmental temperature activates the furnace, whereas a rise in temperature shuts the system down. The hypothalamus senses minor changes in body temperature. The anterior hypothalamus controls heat loss, and the posterior hypothalamus controls heat production [7].

When nerve cells in the hypothalamus become hotter than the "set point," impulses are sent out to reduce body temperature. Mechanisms of heat loss include sweating and vasodilation (widening of blood vessels and inhibition of heat production). If the hypothalamus senses the body's temperature is lower than the "set point," signals are sent out to increase heat production by muscle shivering or heat conservation by vasoconstriction (narrowing) of surface blood vessels [7].

Because extreme heat or cold can injure your client, the massage therapist must be constantly aware of water temperature. Water temperature below 32 degrees or higher than 124 degrees Fahrenheit can cause tissue damage. It is helpful to test the water with your fingertips, but more accurately, to use a thermometer [7].

Benefits of Hydrotherapy

Hydrotherapy increases blood circulation, including circulation of the immune system's white blood cells. Hydrotherapy also increases the body's production of endogenous opioid peptides, particularly endorphins. Enhanced circulation and increased endorphins strengthen

the immune system, reduce inflammation, heal injured tissue, improve well-being and energize the body.

Hydrotherapy also supplies fresh nutrients and oxygen to injured tissue and helps with the removal of waste products. In injuries, alternate applications of heat and cold accelerate healing by improving blood vessel integrity and muscle tone. Heat causes peripheral (surface) blood vessels to dilate or expand. Cold causes peripheral blood vessels to constrict and drives blood back to the organs [8].

Water Cure Therapies:

Water cure in the therapeutic sense is a course of medical treatment by hydrotherapy. It can be classified as follows according to use of contents [9],

1. Enema therapy

A) Ozone enema

B) Bowel stimulating enema

C) Disposable enema

D) Barium enema

E) Rectal corticosteroids

F) Alcohol enema

G) Pre-delivery enema

H) Tobacco smoke enema

I) Coffee enema

2. Gel therapy

A) Hydro gel therapy

B) Organo gel therapy

C) Xerogel therapy

D) Aero gel therapy

1. Enema therapy:

Enema comes from Greek, means "inject". An enema is the procedure of introducing liquids into the rectum and colon via the anus. The increasing volume of the liquid causes rapid expansion of the lower intestinal tract, often resulting in very uncomfortable bloating, cramping and powerful peristalsis, a feeling of extreme urgency and complete evacuation of the lower intestinal tract. An enema has the advantage over any laxative in its speed and certainty of action, and retaining an enema for 10 - 15 minutes causes a more thorough result. It can be carried out as treatment for medical conditions, such as constipation and encopresis, and as part of some alternative health therapies. They are also used to administer certain medical or recreational drugs [9].

Improper administration of an enema may cause electrolyte imbalance (with repeated enemas) or ruptures to the bowel or rectal tissues resulting in internal bleeding. The enema tube and solution may stimulate the vagus nerve which may trigger an arrhythmia such as bradycardia. Enemas should not be used if there is an undiagnosed abdominal pain since the peristalsis of the bowel can cause an inflamed appendix to rupture [9]. There are arguments both for and against colonic irrigation in people with diverticulitis, ulcerative colitis, Crohn's disease, severe or internal hemorrhoids or tumors in the rectum or colon, and its usage is not recommended soon after bowel surgery (unless directed by one's health care provider). Regular treatments should be avoided by people with heart disease or renal failure. Colonics are inappropriate for people with bowel, rectal or anal pathologies where the pathology contributes to the risk of bowel perforation [9]. Enemas have been used for rehydration therapy (proctoclysis) in patients for whom intravenous therapy is not applicable [10].

This therapy is sub-classified as follows-

A) Ozone water therapy- Recent research has shown that ozone water is sometimes used in enemas, can immediately cause microscopic colitis [11].

B) Bowel stimulating enema: Usually consist of water, which works primarily as a mechanical stimulant, or they may be made up of water with baking soda (sodium bicarbonate) or water with a mild hand soap dissolved in it. Buffered sodium phosphate solution draws additional water from the bloodstream into the colon to increase the effectiveness of the enema, but can be rather irritating to the colon, causing intense cramping or "griping." Mineral oil functions as a lubricant and stool softener, but often has the side

effect of sporadic seepage from the patient's anus which can soil undergarments for up to 24 hours. Glycerol is a specific bowel mucosa irritant and when introduced in very dilute solution serves to induce peristalsis sometimes equal parts of milk and molasses heated together to slightly above normal body temperature are used as enema solution [9].

C) Disposable enema: Cleansing the lower bowel prior to a surgical procedure such as sigmoidoscopy or colonoscopy. Because of speed and supposed convenience, enemas used for this purpose are commonly the more costly, sodium phosphate variety – often called a disposable enema. A more pleasant experience preparing for testing procedures can usually be obtained with gently-administered baking soda enemas; cleansing the lower bowel for colonoscopy and other bowel studies can be effectively achieved with water-based, or water with baking soda, enema administration [9].

In Asian countries, particularly in Japan, commercially available disposable enemas typically contain glycerin (at concentrations varying from 30-50%) or sodium chloride. They are not lubricated and the amount of liquid contained in them may vary, although most contain about 20-40 ml of diluted glycerin. For home use, disposable enema bottles (reusable rubber/vinyl bags/bulbs) are common to be used. Marketed disposable products are disposable bags (connected to disposable tubing, can commonly be used for many months or years without significant deterioration), closed top syringes (to relieve aches and pains via gentle heat administrations to parts of the body), clysters syringes (for symptoms of constipation). Many self-given enemas used at home are the packaged, disposable, sodium phosphate solutions in single-use bottles sold under a variety of brand names, or in generic formats. In medical or hospital environments, reusable enema equipment is now rare because of the expense of disinfecting a water-based solution. For a single-patient stay of short duration, an inexpensive disposable enema bag can be used for several days or weeks, using a simple rinse out procedure after each enema administration. The difficulty comes from the longer time period (and expense) required of nursing aides to give a gentle, water-based enema to a patient, as compared to the very few minutes, it takes the same nursing aide to give the more irritating, cold, packaged sodium phosphate unit [9].

D) Barium enema: It is used as a contrast substance in the radiological imaging of the bowel. The enema may contain barium sulfate powder or a water-soluble contrast agent. Barium enemas are sometimes the only practical way to view the colon in a relatively safe manner. Following barium enema administration, patients often find that flushing the

remaining barium with additional water, baking soda, or saline enemas helps restore normal colon activity without complications of constipation from the administration of the barium sulfate [9].

E) Rectal corticosteroids: These are sometimes used to treat mild or moderate ulcerative colitis. They also may be used along with systemic (oral or injection) corticosteroids or other medicines to treat severe disease or mild to moderate disease that has spread too far to be treated effectively by medicine inserted into the rectum alone [9].

F) Alcohol enema: People who wish to become intoxicated faster use an alcohol enema as a method to instill alcohol into the bloodstream, absorbed through the membranes of the colon. Only a small amount is needed as the intestine absorbs the alcohol more quickly than the stomach. Deaths have resulted due to alcohol poisoning via enema [9].

G) Pre-delivery enema: In certain countries (the United States), it was thought a good idea to cleanse the bowel for pregnant women were given enemas prior to labor to reduce the risk of feces being passed during contractions. Under some controversial discussion, predelivery enemas were also given to women to speed delivery by inducing contractions. Nowadays it was abandoned because obstetricians commonly give Pitocin to induce labor [9].

H) Tobacco smoke enema: Now obsolete, it was used for resuscitating victims of drowning during the 18th century.

I) Coffee enema: These are administered in Gerson therapy.

The main medical usages of enemas are: [9]

A) As a bowel stimulant, similar to a laxative – the main difference being that laxatives are commonly thought of as orally administered while enemas are administered directly into the rectum, and thereafter, into the colon. When the enema injection into the rectum is complete, and after a set "holding time", the patient expels feces along with the enema in the bedpan or toilet.

B) Enemas may also be used to relieve constipation and fecal impaction, although, in the USA and some other parts of the world, their use has been replaced in most professional health-care settings by oral laxatives and laxative suppositories. In-home use of enemas for constipation and alternative health purposes is somewhat harder to measure.

C) Bowel stimulating enemas usually consist of water, which works primarily as a mechanical stimulant, or they may be made up of water with baking soda (sodium bicarbonate) or water with a mild hand soap dissolved in it. Buffered sodium phosphate solution draws additional water from the bloodstream into the colon to increase the effectiveness of the enema, but can be rather irritating to the colon, causing intense cramping or griping. Mineral oil functions as a lubricant and stool softener, but often has the side effect of sporadic seepage from the patient's anus which can soil undergarments for up to 24 hrs. Glycerol is a specific bowel mucosa irritant and when introduced in very dilute solution serves to induce peristalsis.

D) Other types of enema solutions are also used, including equal parts of milk and molasses heated together too slightly above normal body temperature. In the past, castile soap was a common additive in an enema, but it has largely fallen out of use because of its irritating action in the rectum and because of the risk of chemical colitis as well as the ready availability of other enema preparations that are perhaps more effective than soap in stimulating a bowel movement. At the opposite end of the spectrum, an isotonic saline solution is least irritating to the rectum and colon, having a neutral concentration gradient. This neither draws electrolytes from the body as can happen with plain water, not draws water into the colon, as will occur with phosphates. Thus, a salt water solution can be used when a longer period of retention is desired, such as to soften an impaction.

E) Cleansing the lower bowel prior to a surgical procedure such as sigmoidoscopy or colonoscopy. Because of speed and supposed convenience, enemas used for this purpose are commonly the more costly, sodium phosphate variety – often called a disposable enema. A more pleasant experience preparing for testing procedures can usually be obtained with gently-administered baking soda enemas; cleansing the lower bowel for colonoscopy and other bowel studies can be effectively achieved with water-based, or water with baking soda, enema administration.

F) The administration of substances into the bloodstream. This may be done in situations where it is undesirable or impossible to deliver a medication by mouth, such as antiemetics given to reduce nausea (though not many antiemetics are delivered by enema). Additionally, several anti-angiogenic agents, which work better without digestion, can be safely administered via a gentle enema. Medicines for cancer, for arthritis, and for age-related macular degeneration are often given via enema in order to avoid the normally-functioning

digestive tract. Interestingly, some water-based enemas are also used as a relieving agent for irritable bowel syndrome, using cayenne pepper to squelch irritation in the colon and rectal area. Finally, an enema may also be used for hydration purposes. See also route of administration.

G) Emergency blood expansion. Emergency pre-hospital treatment of hemorrhage requires immediate fluid replacement therapy. In mass casualty, remote or rural settings, the lack of sterile fluids, intravenous equipment or the knowledge to use them might limit the treatment options available. In such situations proctoclysis remains an easy, safe and effective way to provide fluid replacement. It does not require sterile fluids, special equipment or complex training, and it is useful when alternative routes are not readily available.

H) The topical administration of medications into the rectum, such as corticosteroids and mesalazine used in the treatment of inflammatory bowel disease. Administration by enema avoids having the medication pass through the entire gastrointestinal tract, therefore simplifying the delivery of the medication to the affected area and limiting the amount that is absorbed into the bloodstream.

I) General anesthetic agents for surgical purposes are sometimes administered by way of an enema. Occasionally, anesthetic agents are used rectally to reduce medically induced vomiting during and after surgical procedures, in an attempt to avoid aspiration of stomach contents.

J) A barium enema is used as a contrast substance in the radiological imaging of the bowel. The enema may contain barium sulfate powder or a water-soluble contrast agent. Barium enemas are sometimes the only practical way to view the colon in a relatively safe manner. Following barium enema administration, patients often find that flushing the remaining barium with additional water, baking soda, or saline enemas helps restore normal colon activity without complications of constipation from the administration of the barium sulfate.

K) Rectal corticosteroid enemas are sometimes used to treat mild or moderate ulcerative colitis. They also may be used along with systemic (oral or injection) corticosteroids or other medicines to treat severe disease or mild to moderate disease that has spread too far to be treated effectively by medicine inserted into the rectum alone.

2. Gel therapy:

Gel coined by 19th century Scottish chemist Thomas Graham, by clipping from gelatin. It is a solid, jelly-like material that can have properties ranging from soft and weak to hard and tough. Gels are defined as a substantially dilute cross-linked system, which exhibits no flow when in the steady-state. By weight, gels are mostly liquid, yet they behave like solids due to a three-dimensional cross-linked network within the liquid. According to IUPAC definition Gel is no fluid colloidal network or polymer network that is expanded throughout its whole volume by a fluid [12] or A gel has a finite, usually rather small, yield stress Or A gel can contain: (i) a covalent polymer network, e.g., a network formed by cross-linking polymer chains or by nonlinear polymerization; (ii) a polymer network formed through the physical aggregation of polymer chains, caused by hydrogen bonds, crystallization, helix formation, complexation, etc., that results in regions of local order acting as the network junction points.

The resulting swollen network may be termed a thermoreversible gel if the regions of local order are thermally reversible; (iii) a polymer network formed through glassy junction points, e.g., one based on block copolymers. If the junction points are thermally reversible glassy domains, the resulting swollen network may also be termed a thermoreversible gel; (iv) lamellar structures including mesophases e.g., soap gels, phospholipids, and clays; (v) particulate disordered structures, e.g., a flocculent precipitate usually consisting of particles with large geometrical anisotropy, such as in V_2O_5 gels and globular or febrile protein gels.

Hydro gel therapy: [13, 14]

The gel, where the swelling agent is water, the network component of a hydrogel is usually a polymer network and a colloidal network may be referred to as an aqua gel. Hydrogel is a network of polymer chains that are hydrophilic, sometimes found as a colloidal gel in which water is the dispersion medium. These are highly absorbent (they can contain over 99.9% water natural or synthetic polymers). They also possess a degree of flexibility very similar to natural tissue, due to their significant water content. Hydrogels existing naturally in the body include mucus, the vitreous humor of the eye, cartilage, tendons and blood clots. Their viscoelastic nature results in the soft tissue component of the body, disparate from the mineral-based hard tissue of the skeletal system. Common uses for hydrogels include:

1. Currently used as scaffolds in tissue engineering. When used as scaffolds, hydrogels may contain human cells to repair tissue.

2. Hydro gel-coated wells have been used for cell culture.

3. Environmentally sensitive hydrogels which are also known as 'Smart Gels' or 'Intelligent Gels'. These hydrogels have the ability to sense changes in pH, temperature, or the concentration of metabolite and release their load as result of such a change.

4. As sustained-release drug delivery systems.

5. Provide absorption, desloughing and debriding of necrotic and fibrotic tissue.

6. Hydrogels that are responsive to specific molecules, such as glucose or antigens, can be used as biosensors.

7. Used in disposable diapers where they absorb urine, or in sanitary napkins

8. Contact lenses (silicone hydrogels, polyacrylamides, polymacon)

9. EEG and ECG medical electrodes using hydrogels composed of cross-linked polymers (polyethylene oxide, polyAMPS and polyvinylpyrrolidone)

10. Water gel explosives

11. Rectal drug delivery and diagnosis

12. Encapsulation of quantum dots, breast implants and in glue.

13. Now used in granules for holding soil moisture in arid areas. Dressings for healing of burn or other hard-to-heal wounds. Wound gels are excellent for helping to create or maintain a moist environment.

15. Reservoirs in topical drug delivery particularly for ionic drugs, delivered by iontophoresis.

16. For nucleus pulposus replacement, cartilage replacement, and synthetic tissue models.

17. In fiber optics communications, a soft gel resembling "hair gel" in viscosity is used to fill the plastic tubes containing the fibers.

These have common ingredients e.g. polyvinyl alcohol, sodium polyacrylate, acrylate polymers and copolymers with an abundance of hydrophilic groups and natural hydrogel

materials are being investigated for tissue engineering; these materials include agarose, methylcellulose, hyaluronan, and other naturally derived polymers.

A) Organo gel therapy: An organo-gel is a non-crystalline, non-glassy thermoreversible (thermoplastic) solid material composed of a liquid organic phase entrapped in a three-dimensionally cross-linked network. The liquid can be, for example, an organic solvent, mineral oil, or vegetable oil. The solubility and particle dimensions of the structuring are important characteristics for the elastic properties and firmness of the organogel. Often, these systems are based on self-assembly of the structuring molecules [15]. These have potential for use in a number of applications, such as in pharmaceuticals [16], cosmetics, art conservation and food. An example of formation of an undesired thermoreversible network is the occurrence of wax crystallization in petroleum [17].

B) Xero-gels: A xerogel is a solid formed from a gel by drying with unhindered shrinkage. Xerogels usually retain high porosity (15–50%) and enormous surface area (150–900 m2/g), along with very small pore size (1–10 nm). When solvent removal occurs under supercritical conditions, the network does not shrink and a highly porous, low-density material known as an aerogel is produced. Heat treatment of a xerogel at elevated temperature produces viscous sintering (shrinkage of the xerogel due to a small amount of viscous flow) and effectively transforms the porous gel into a dense glass. Many gels display thixotropy – they become fluid when agitated, but re-solidify when resting. In general, gels are apparently solid, jelly-like materials. Some species of animals secrete gels that are effective in parasite control. For example, the long-finned pilot whale secretes an enzymatic gel that rests on the outer surface of this animal and helps prevent other organisms from establishing colonies on the surface of these whales' bodies [17].

C) Aero gel- Virtually when air/gas is to be used as an extender fluid, the system is called aerogels with very low density, high specific surface areas, and excellent thermal insulation properties [17].

Pros of hydrotherapy: [9]

1. It is useful in techniques such as massage and yoga performed in water.

2. It is useful internally which involves drinking water or receiving fluids through an intravenous (IV) infusion.

3. Water heat from steam works well to relieve muscle aches.

4. By cold-water therapy treats depression patients by immersing the body in water, applying a whole-body wrap, and administering a cold shower that lowers brain temperature to improve symptoms of depression.

5. Effective for rehabilitation after orthopedic and spinal surgery which have resulted in chronic pain to relax muscle tension and reduce swollen joints.

6. It stimulates endorphins which will help to control the pain and alleviate tension.

7. The use of hot whirlpool baths with massaging jets to reduce the duration and severity of back pain when used alongside conventional medicine.

8. Useful in stress relief related to high blood pressure, headaches, insomnia, depression etc.

9. Used as Colonic Hydrotherapy, particularly helpful in Irritable Bowel Syndrome (IBS).

10. Water temperature helps to normalize the bowel as well as flushing out any unwanted toxins.

11. The treatment can also be useful during dieting periods, fasting, detoxifying and liver flushes as well as treating specific issues such as asthma, bloating, indigestion, bowel complaints and skin problems.

Benefits of common forms of Hydrotherapy: [9]

Hot water or cold water treatment: Where the whole body or a part of the body should be immersed in the water and body parts like the arm, hip or leg or even full body can be treated individually. Cold water treatments work well in the treatment of depression and improve the recovery time.

Mechanical pumps: Can be used to drive water in and out of the tank and it can be heated with the aid of heating coils. Hot tub bath or spa treatment shows immediate results on the body of an individual and it helps in providing relief from pain.

Essential oils and aromatherapy: Oils too can be used as a part of hydrotherapy and these oils can be utilized to provide the desired massage to the body. Coconut Oil for Hair and Acne.

Sitz bath, mineral bath and hot spring bath: can be used in various kinds of treatments which provide better circulation of the blood to various organs of the body. It also helps in providing immunity to the body and heals the tissues affected due to wear and tear of various body parts. It is also recommended for providing energy to the body.

Constitutional hydrotherapy: Can be deployed as an effective treatment in the cases of respiratory tract infections, inflammation and arthritis and in cases where the muscles have gone stiff due to fibroids. It also helps patients suffering from diabetes and low blood pressure. It works wonders in the case of depression and intense headaches.

Water Massage: Is one of the techniques for relaxation. Several different types of massages use oil as a medium between the therapist and the person, but this massage uses water and its density as a medium. For example Hot Stone Massages (hot stones are used manually as tools to massage the body), Scalp Massage, Aqua massage /dry hydrotherapy (which includes an enclosed table which does not allow the water to touch the patient. It works by charging jets of water up in opposition to the bottom of the table surface, where a patient is lying. A bar is moved alongside the flat length of the table, taking the water's force from one end to the other end of the body).

Miscellaneous: Aromatherapy Herbal Treatment Benefits, Aromatherapy Fanning, Aromatherapy Herbal Cosmetic, Throat Infection Remedies, Orthopedic Massage Therapy, Thai Massage Therapy, Therapeutic Massage, Trigger Point Therapy, Sports Massage Therapy, Shiatsu Massage Therapy (foot, facial, back), Baby Massage Therapy, Deep Tissue Massage Therapy, Pregnancy Massage Therapy, Energy Healing Therapy, Myotherapy, Neuromuscular Massage Therapy, Abdominal Massage, Acupressure Massage, Ayurvedic Massage (Head, Face, Back), Lymphatic Massage, Reiki Meditation, Frozen Shoulder Massage, Zero Balancing Massage Therapy, Breath Therapy, Push Therapy, Somatic Movement Therapy, Structural Energetic Therapy, Thalassotherapy, Vibration Healing Massage Therapy, Vortex Healing, Watsu Massage, Bamboo Massage, Panchakarma etc.

Application of Hydrotherapy [18, 19, 20, 21, 22]

Hydrotherapy can be applied with water and the addition of herbs, shampoos, salt pastes, and other ingredients. Some therapists combine these treatments with a massage, while others use hydrotherapy modalities exclusively.

Sitz Bath

A sitz bath is a partial, warm bath, covering the pelvic region and up to the navel. The bath chamber is designed so that the legs remain out of the bath. Water temperature ranges from 90 degrees to 102 degrees Fahrenheit for three to eight minutes, if the desired effect is for a tonic or stimulating treatment. For a sedative, calming effect increase the time to twenty to forty-five minutes. Salt or alum can be added to the water. Be sure to ask the patient to void prior to the sitz bath. The feet can be placed in a tub of water that is warmer than the sitz bath to provide increased circulation. The client must be covered with a dry sheet for protection and comfort. After the sitz bath, the client can take a thirty-second shower, or plunge or pour may be used.

A sitz bath is indicated for relief of painful menstruation and is contraindicated if the patient has pelvic inflammation. Be sure to assist the client to get out of the sitz bath and allow to rest after completion.

Swedish Shampoo and Turkish Shampoo

The Swedish Shampoo involves brushing the body with warm, soapy water, using circular or linear motion. After completion of the shampoo, pour a pail of water heated to 105 degrees Fahrenheit over the patient's skin. Then follow with a lukewarm shower.

A Turkish Shampoo is similar to the Swedish Shampoo, except the final pail of water is a cooler temperature of 90 degrees Fahrenheit.

Salt Rub or Salt Glow

Salt glow or salt rub is the rubbing application of wet salt on the skin. Salt glows are used to exfoliate the skin, causing a tonic and stimulating effect. Contraindications include freshly-shaven skin, abrasions, cuts, or skin rashes. The application of the wet salt mixture is accomplished using brisk friction. Application must be light and must be avoided on ruddy skin or thin skin, due to the adverse effects of injury to superficial blood vessels. Caution should also be taken over bony prominences and sensitive areas. Note the condition of the skin after completion. Some spas have specially designed tables for this treatment and others have rooms designed for salt glows. The client may lie on a table or stand. Salt glows, Swedish Shampoos and Turkish Shampoos may be conducted outside, as long as the area is private and quiet.

Hydrotherapy applications can be a beneficial addition to the massage therapist's services, and most can be started without a tremendous outlay of financial resources. Just as it is with any massage modality, the massage therapist must be thoroughly familiar with the method prior to working on the first client.

Cryotherapy

Another popular water therapy modality is cryotherapy, which is the application of cold. Ice therapy is safe, inexpensive, and can be used in the home or in the therapist's establishment.

The physiologic effects of ice vary according to the length of time ice is applied to the skin. During the initial time from nine to sixteen minutes, the area experiences vasoconstriction or reduced blood flow. The skin appears pale, local edema is reduced, and hematoma formation is controlled. If the ice application continues another four to six minutes, vasodilation occurs.

After a few minutes, vasoconstriction will occur again. The entire cycle will take fifteen to thirty minutes. This cycle of vasoconstriction – vasodilation – vasoconstriction is referred to as the hunting response. The alternating response brings blood into and out of the area where the ice is applied, causing tissue debris to be flushed out and oxygen to be brought into the area.

Hydrotherapy during labor and birth

More than 31,000 underwater births have been reported in studies worldwide, and approximately 6% of women in the United States experience the pain relieving benefit of water immersion hydrotherapy during labor and/or birth. [23]Utilization rates of water immersion hydrotherapy in midwifery and midwife-led collaborative practices in the United States tend to be higher, ranging from 15%-64% during labor and 9%-31% during birth. [24, 25, 26]

The safety and efficacy of immersion hydrotherapy are well established for the first stage of labor. While pain relief is the only certain effect of immersion hydrotherapy in labor at this time, immersion may also hasten cervical dilation, resolve labor dystocia, and contribute to postpartum maternal satisfaction with childbirth. [27, 28]

CONCLUSION

Hydrotherapy refers to the medicinal use of water, including hot tubs, cold water treatments, ice packs, vapors, saunas, mineral springs, hot springs, sitz baths, wet towel applications, water exercises, and water massage. Hydrotherapy immersion waters available at spas may be rich in specific minerals or enhanced with aromatic oils or herbs. Many different forms of hydrotherapy are available. It's important to use the correct type of treatment since extremes of heat or cold and could be dangerous for some people.

Hydrotherapy refers to a process which uses water at any temperature or forms to relieve pain and treat illness. Hydrotherapy was recognized as a scientific method and physicians were commonly utilizing the healing properties of water for the treatments of illness. Positive effects of hydrotherapy were experienced on physical function, energy, sleep, cognitive function, ability to work and participation in daily life. Further controlled studies are needed. The hydrotherapy instructors had an important coaching role, which needs to be promoted.

Hydrotherapy has been practiced as a healing art in many cultures since the beginning of recorded history. Like massage, hydrotherapy supports relaxation, cleansing, detoxification, and improved healing outcomes. Used together, massage and hydrotherapy are synergistic and more powerful than either modality used alone.

Hydrotherapy may help treat various conditions, including arthritis, stomach issues, sleep disorders, stress and depression. The theory behind hydrotherapy is that water has healing properties that can relieve various ailments and conditions. In its different forms ice, liquid, and steam water is a versatile treatment method.

REFERENCES

1. Biel, A. Trail Guide to the Body. Books of Discovery. 1997
2. Campion, M (1990) Adult Hydrotherapy, a practical approach. Oxford Heinaman Books.
3. Kamenetz HL (1963) History of American spas and hydrotherapy. In: Licht S, ed. Medical Hydrology. Waverly Press, Baltimore, pp 160-183
4. Krizek V (1963) History of balneotherapy. In: Licht S, ed. Textbook of Medical Hydrology. Waverly Press, Baltimore, pp 132-149
5. Moor F, Peterson S, Manwell E, Noble M, Muench G (1964) Manual of hydrotherapy and massage. Pacific Press Publishing Association, Idaho, pp 1-29
6. Petrofsky JS, Laymon M; Assessment of muscle temperature after water immersion and hot and cold packs in man Submitted Physical Therapy (2001) 1-12
7. Hinkle, C. Fundamentals of Anatomy and Movement. Mosby. 1997. 120-129
8. Shevchuk NA, Adapted Cold Shower as a Potential Treatment for Depression, Med Hypotheses, Nov 9, 2007.

9. Gita Chaurasia, Amruta Patil and Shweta Dighe; a review on therapeutic aspects of hydrotherapy *IJPSR, 2015; Vol. 6(7): 2713-2722.*
10. Bruera E, Pruvost M, Schoeller T, Montegjo, G and Watanabe, S: Proctoclysis for Hydration of Terminally Ill Cancer Patients. Jour Pain Symptom Management; 15, 4:216–9.
11. Eliakim R, Rachmilewitz D Cohen and Petricia ZA: Ozone Enema, A Model of Microscopic Colitis in Rats. Digestive Diseases and Sciences; 46, 11: 2515–20.
12. Richard GJ, Edward SW, Metanomski W, Jaroslav KM, Hess RS and Tatsuki K: Compendium of Polymer Terminology and Nomenclature, edition 2, 2009: 464.
13. Pure and Applied Chemistry 83, 12, 2011: 2229–2259.
14. Richard G. J, Edward SW, Metanomski, Jaroslav K, Michael H, Robert S, Tatsuki K: Compendium of Polymer Terminology and Nomenclature, 2009.
15. Terech P: Low-molecular weight organogelators. in: Robb I.D. Specialist surfactants. Glasgow: Blackie Academic and Professional; 208–268.
16. Kumar, R and Katare, OP: Lecithin organogels as a potential phospholipid-structured system for topical drug delivery: A review. AAPS Pharm Sci Tech 2005; 6, 2: E 298–310.
17. Visintin RFG, Lapasin R, Vignati E, D'Antona P, Lockhart TP: Rheological behavior and structural interpretation of waxy crude oil gels. Langmuir 2005; 21, 14: 6240–9.
18. Salvo, S. Massage Therapy Principles and Practices. W.B. Saunders. 1997.
19. O'Rourke, M. Hydrotherapy and Heliotherapy. Educating Hands. 1995.
20. Moor, F. Manual of Hydrotherapy and Massage. Mosby. 1997.
21. Gould, B. Pathophysiology for the Health-Related Professions. W. B. Saunders. 1997.
22. Fritz, S. Mosby's Fundamentals of Therapeutic Massagae. Mosby. 1995
23. Nutter, E, Meyer S, Shaw-Battista J, Marowitz A. (in press). Waterbirth: An integrative analysis of peer reviewed literature. Journal of Midwifery & Women's Health
24. Cohen J. Integrating water into maternity care. *Midwifery Today Childbirth Educ*.1996;Fall(39):36.
25. Rosenthal M. Warm-water immersion in labor and birth. *Female Patient*. 1991; 16: 44-50.
26. Church L. Water birth: one birthing center's observations. *J Nurse Midwifery*. 1989; 34(4):165-70.
27. Cluett E, Pickering R, Getliffe K, St. George-Saunders N. Randomised controlled trial of labouring in water compared with standard of augmentation for management of dystocia in first stage of labour. *BMJ*. 2004; 328(7435): 314.
28. Cluett E, Burns E. Immersion in water in labour and birth. *Cochrane Database Syst Rev*. 2009;2:CD000111