Anti-secretory drugs, PPIs and Physis: Partners or Rivals?

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Background

Conventional medicine and Tibb differ in a number of important points. First of all, Tibb regards a person's **lifestyle** as a critically important influence on whether he or she develops a particular ailment. Conventional medicine is only now, belatedly, starting to recognise the fact that, for example, what we eat, how well we sleep, and how much physical activity we regularly undertake has an immense influence on the knife-edge balance between health and sickness. Tibb has known about this for centuries; however more and more objective reports, with scientific support, point to the value of a sensible and acceptable lifestyle in the avoidance of many disorders, and in active treatment of a multitude of common diseases, especially those of a chronic nature.

Another point of departure is how the patient is regarded. A frequent criticism of conventional medicine is that it adopts a 'one size fits all' view of a patient, with scant regard paid to his or her individuality. Tibb on the other hand considers each person to be unique. The concept of **temperament** is adhered to in both diagnosing a person's ailment, and when bringing in whatever treatment is decided upon.

Yet another difference relates to the idea of inner, or self, healing. Conventional medicine is lukewarm on this concept, and reluctant to accept that the human body has immense powers of self-regulation and inner healing. Little more than lip service is paid to the idea that most, if not all, diseases, especially of a chronic, lifestyle-related nature, will respond in time to the body's power of inner healing. A major axiom of Tibb, however, holds that **Physis** is a central feature of the healing process, whether in the physical, mental or emotional realm.

Physis – the Governor of the Body

Good health is the outcome of a three-way harmonious balance between a person's nature, the environment, and his or her diet and lifestyle. This harmony, also termed *homeostasis*, is regulated by Physis, the body's vital force, which operates at all levels in the person, from the individual cell up to integrated organ systems. It is also active in the psychological domain, controlling emotions and behaviour. In the medical context, Tibb regards disease as arising from a disturbance to this harmony, so treatment aims to support the inner healing properties of Physis. Contrary to much of conventional or modern therapy, the objective of traditional Tibb treatment, whether by lifestyle reform, or herbal medicines, or by hands-on techniques, is to support and enhance Physis; never to restrict or diminish it.

Two different approaches to disease

In this article “conventional drugs” refer to any artificial chemicals, whether based on new chemical entities or on naturally occurring substances, which are used as a medicine to treat troublesome disorders. They are usually available from the pharmacist directly, or via prescriptions. Their use is a major, even dominant, contributor to present-day conventional medicine, and they are consumed by the vast majority of people in the treatment of most ailments, both *acute* (as with painkillers and antibiotics) and *chronic* (as with arthritis and depression).

Conventional medicine tends to view the body mechanistically as a physical machine, whose parts and systems have to be adjusted or replaced regularly due to wear and tear or from disease. Good health happens when the machine is working properly; disease occurs when a specific part of the machine begins to malfunction. The idea of drugs fits into this model, as they restore proper working order to discrete parts of the body-as-machine, so keeping the internal systems functional, at least until the next malfunction.

Perhaps the main objection to conventional drugs is that they suppress symptoms, but do not actually bring about a cure for the ailment. Although this may be, and usually is, a satisfactory response when treating acute symptoms such as headache, fever, inflammation, breathing difficulties, high blood pressure and cholesterol, it does nothing to sort out the underlying cause(s) which have brought about the symptoms in the first place.

On the other hand, the naturalistic view, which is shared by Tibb, adopts a different concept of health and disease. It regards health as the dynamic equilibrium, maintained by Physis, which exists between the person, the lifestyle followed, and the environment. In this model, disease reflects a disturbance in this harmony, which leads to a range of signs and symptoms. Much of the treatment of ailments, and the maintenance of good health, revolve around measures calculated to support and stimulate Physis.

Many diseases which afflict our people, whether heart disease, depression, cancer or rheumatism, are caused, to a greater or lesser extent, by a faulty, possibly unnatural, lifestyle. Furthermore, Tibb considers that Nature itself provides the remedies needed to achieve physical and emotional wellbeing. Tibb and other forms of naturalistic medicine are highly respectful of the innate power of the human body, and focus on natural ways for restoring inner harmony. Amongst these are the amazing, but neglected, recuperative powers we are born with.

How conventional drugs work

A drug’s action is a complex physical and chemical process, still not completely understood. Overall, the net effect of a drug’s action is to either stimulate or depress certain biochemical and physiological functions within the body. The drug may act generally (or *systemically*) upon all cells within the person’s body, as with chemotherapy. Alternatively, the drug may take effect *locally* in certain cells or special tissues, or on the complete organ. Furthermore, the drug may exert its action on the surface of the cell, or on membranes or structures within the cell. It may also act to inhibit a key enzyme in a biochemical cascade within an organ which is essential for regulatory or metabolic performance.

One problem which arises is whether the action of the drug interferes with the body’s natural ability for self-healing. Are the innate mechanisms for healing, as Physis, pushed to one side by the action of specific drugs used in particular ailments? In many cases the answer must be “yes”. Suppressing particular symptoms, such as vomiting, fever, coughing and inflammation can potentially inhibit Physis. This phenomenon can be well illustrated by the use of anti-secretory drugs in general, and the proton pump inhibitors (PPIs) in particular.

How PPIs work

Hydrochloric acid is made up of a combination of hydrogen ions, or *protons*, and chloride ions. It is produced in the body by specialised cells mentioned earlier, the *parietal* cells. The mechanism responsible is an enzyme known as hydrogen-potassium ATPase, aka H^+K^+ *ATPase.* They effectively pump protons, or acid, into the upper digestive tract from the inner lining of the stomach. Proton pump inhibitors (PPIs) are synthetic chemical drugs which strongly inhibit this enzyme, by as much as 95%. They are usually given by mouth, converted to the active form in the acidic environment of the stomach, before being absorbed by the small intestine into the general, or *systemic*, circulation. They act powerfully on the parietal cells, reducing acid secretion markedly. After exposure to the PPI, the enzyme is denatured, so has to be synthesised anew. They have a relatively long-lasting effect.

The PPIs act directly upon the parietal cells, which are located in the upper part of the stomach. PPIs selectively inhibit acid production, and have little or no effect on the volume of gastric acid, nor on stomach or intestinal movements. The overall effect of the PPI is a rise in stomach contents pH, making them more alkaline, so decreasing irritation from the acid. This allows the lining of the upper gut to heal, and provides relief from the symptoms troubling the patient.

Role of stomach acid

Embedded in the inner lining of the stomach are specialised glands which secrete gastric juice from *parietal cells*. These cells are also found solely in the stomach. They act under the influence of the hormone *gastrin,* which is secreted in response to the arrival of food from the esophagus. The main components of gastric juice are hydrochloric acid, mucus (a protein, *mucin*) and *pepsinogen*. The acid activates pepsinogen to form pepsin, the active enzyme.

Gastric juice also contains *rennin*, an enzyme which coagulates milk prior to digestion. This is less important in adults than in young children. Another enzyme, *lipase*, begins the conversion of dietary fats to their components as the first stage in their further digestion and absorption. In addition, gastric juice also contains a substance, *intrinsic factor*, which is needed to absorb vitamin B_{12}. This is essential for the body's general good health.

Stomach acid is produced by a layer of cells which lines the stomach, and this acid (*hydrochloric*) is there for several good reasons:

- It activates the enzyme pepsin, which digests proteins in the food
- It helps the absorption of nutrients and vitamins such as vitamin B_{12}
- It serves as a lethal barrier to bacteria and other microbes entering the body

The acid is prevented from attacking the lining of the person's stomach by a layer of the mucus. In addition, the stomach lining is replaced continuously and rapidly, typically every three days, by new tissue.

Without the presence of this acid, the efficient absorption of nutrients and necessary co-factors for metabolism would be impossible. Also, the build-up, or overgrowth, of possibly harmful bacteria such as *Helicobacter pylori,* and fungi such as *Candida,* would proceed unimpeded.

The conventional treatment of hyperacidity

Conventional medicine identifies excess stomach acid as the basic cause of disorders like heartburn, indigestion and acid reflux. Many conventional drugs have been developed to neutralise excess acid, or inhibit its formation in the stomach's glands.

These widely sold conventional drugs have a potent and long-lasting pharmacological action. They reduce hydrochloric acid production in the stomach, by acting directly on the acid-forming mechanisms in the stomach necessary to digest proteins taken in as food. The PPIs, such as omeprazole *(Nexium) and* pantoprazole *(Protonix),* are the most popular drugs globally used for the temporary relief from the pain of digestive disorders such as indigestion or *dyspepsia,* gastric ulcers, inflammation of the oesophagus, gastric reflux and heartburn. Although their effect is very specific, the effects of its action are more far-reaching. Although generally safe in the recommended dosages, their use for more than 14 days, up to three times a year, is not advised. The PPIs have largely replaced the previous popular anti-secretory drugs, the H_2 histamine antagonists such as *Tagamet*.

Adverse drug reactions of the PPIs

Reduced acidity can appear in tissues other than the stomach. A significant increase in disturbances to the heart's normal rhythm has been noted in patients taking PPIs over the long term. It seems that the pharmacological action on heart tissues involves other ions, particularly potassium and calcium, as well as changes in acidity.

Reducing the acid content of the stomach allows some protein to evade digestion, as pepsinogen is not fully converted to the active form pepsin. This undigested protein travels down the digestive tract, where some of it may be absorbed into the body. In some people this can lead to food allergies.

A number of side effects have been reported with the PPIs. Their frequency and severity depend to a great extent on whether they are used in the short- or long-term, and how often.

- ***Common side effects.*** Digestive disorders such as nausea, abdominal pain, flatulence and diarrhoea have been commonly reported.
- ***Increased risk of bone fracture*** especially of the hip, spine or wrist. This seems to be linked to the effect of PPIs on cells involved in bone building. This unwanted effect is more prominent when the PPI is taken for some time. Reduction in stomach acid leads to less calcium being available for absorption further down the digestive tract. Alternatively, the production of acid required for the bone building cells is reduced by the PPI, so leading to reduced bone remodelling.

- ***Decrease in vitamin B_{12} absorption.*** The body uses hydrochloric acid to release vitamin B_{12} from food. Reduced acidity in the stomach from long-term PPI usage can therefore lead to a lack of available vitamin B_{12} for absorption. Elderly persons seem particularly affected.

- ***Iron deficiency***. This is quite a common side effect, and due to interference with absorption of the essential metal mineral iron.

- ***Increased risk of allergies***. As the breakdown of proteins from the food eaten is reduced when gastric acid secretion is inhibited, the chances of allergens escaping into the body increases, so sensitising tissues into an allergic reaction. This can lead to food allergies developing. This may occur over both short- and long-term treatment.

- ***Increased risk of childhood asthma*** in children from women who received a PPI during their pregnancy.
- ***Increased risk of pneumonia.*** Patients at increased risk of pneumonia should only receive PPIs at the lower dose level, as acid suppression allows pathogenic bacteria to penetrate the stomach acid barrier.
- ***Increased risk of diarrhoea.*** The longer term, higher dose level use of a PPI can increase the risk of bacterial infection, particularly by the problematic *Clostridium difficile* (*C. Diff*).
- ***Premature ageing of the skin***. This is due to interference with the acidic environment needed for new skin synthesis and texture.
- ***Rebound hyperacidity.*** When PPI treatment is discontinued, a rebound in stomach acid secretion may occur for a few days. This can result in gastric symptoms such as dyspepsia.
- ***Miscellaneous***. Isolated cases of dementia, irregular heartbeat, dizziness and fatigue have also been reported, as have skin rash, constipation and depression.

Discussion

PPIs are generally used to oppose the many symptoms of excess stomach acid, from heart burn to indigestion, and esophagitis to peptic ulcers. Unfortunately the mere act of opposing acid secretion in the stomach is mirrored by the same response in other tissues and organs, where changes in acid content are the norm for their internal metabolism.

Overall, the physiological effect of PPIs on acid secretion from the parietal cells in the stomach upsets the activities of Physis in various parts of the body. The immediate side effects reported – nausea, diarrhoea and abdominal pain – suggest that Physis is making an attempt at ejecting what is effectively an alien substance from the body. The longer term effect of PPIs on bone formation, making them more porous and prone to fracture, suggests that the effect on parietal cells is disrupting local metabolic harmony. The decreased vitamin B_{12} absorption is an unintended consequence of reduced acidity in the upper digestive tract, reflecting an upset biochemical system under the control of Physis. This also applies to the absorption of iron from the upper digestive tract. Another consequence is the 'escape' of intact proteins from a lower acidic stomach environment, so allowing a food allergy situation to develop. Similarly, allergic asthma can develop. This also applies to the increased risk of developing diarrhoea and pneumonia, as pathogenic bacteria normally neutralised by the acid content of the stomach penetrate further down the digestive tract, or into the general systemic circulation respectively. Premature ageing of the skin could conceivably be laid at the door of disturbed local harmony in acid provision during collagen synthesis. Rebound hyperacidity is a predictable consequence of disturbed harmony in a specific biochemical system, akin to rebound hypertension following discontinuation of certain blood pressure lowering drugs such as clonidine. Finally, the occurrence of miscellaneous side effects may reflect disturbed harmony in specific sites of the body, or may indicate local toxicity to the effects of an alien, never before experienced, chemical substance.

In conventional medicine the body's own defense mechanisms are often suppressed or shut down completely. For example, the cough reflex, fever and inflammation are innate protective mechanisms which help clear the airways, stimulate the immune system, and neutralise threatening irritations respectively. Certain symptoms may exceed the normal control exerted by Physis, or possibly persist for too long. Unfortunately, in conventional medicine they are

often counteracted prematurely by the use of cough suppressants (given as cough medicine), anti-inflammatories (to inhibit the inflammatory response), or antipyretics (to bring down body temperature). Also, diarrhoea, vomiting, excessive urination, nosebleeds, headaches and perspiration are often treated instead of letting the body heal itself. Physis is not allowed the liberty of reducing the underlying causes of the symptoms, and is effectively side-lined.

Tibb encourages the body's built-in defense mechanisms. Not only are they effective, but they maintain their strength for future similar episodes of illness – unlike, say, the use of antibiotics which not only confront increasing resistance the more they are used, but actually reduce the immune system's efficacy.

Summary

The PPIs have become firmly established in the treatment of a number of common, and not so common, functional disorders of the upper digestive tract. They are often administered alone, but also as a component in the triple treatment of gastric and peptic ulcers. Their mode of action is selective, being confined to inhibiting the secretion of hydrochloric/gastric acid in the upper part of the stomach. However, their action opposes the natural regulatory activity of Physis to some extent. In the short term this may be of little consequence. However, over the longer time frame PPI therapy can have a number of unintended consequences, some of which could be serious.

The role of Tibb and other forms of holistic healthcare is to restore internal harmony, or *homeostasis*, by changes in lifestyle, the use of specific physical therapies, and the use of herbal remedies. The overall objective is to support and stimulate the person's Physis, so overcoming naturally the disturbances to the internal harmony. Simple changes to our lifestyle which affect our digestive system – what we eat, how much exercise we get, how we respond to stress, the quality of our elimination systems, and forsaking bad habits such as smoking – can provide a powerful alternative for the treatment of most cases of digestive system disorders, without upsetting our inner doctor, Physis.

Sources for this article include:

1. Physis comes in from the cold. Online at: http://www.tibb.co.za/Research _reviews.html
2. Conventional drugs – how do they work? Online at: http://www.tibb.co.za/Research _reviews.html
3. Proton Pump Inhibitor and Histamine 2 Receptor Antagonist Use and Vitamin B_{12} Deficiency Online at: http://jama.jamanetwork.com/article.aspx?articleid=1788456
4. Proton-pump inhibitors. Online at: http://en.wikipedia.org/wiki/**Proton-pump_inhibitor**
5. Side effects and long-term complications from the use of Proton Pump Inhibitors. Online At: www.medscape.com/viewarticle/804146

Further reading

Tibb – Traditional Roots of Medicine in Modern Routes to Health. Online at: www.tibb.co.za/Traditional%20Roots%20of%20Medicine%20-%Electronic%20Version%20Revised%2020%20Jan%2014.pdf

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