

Fever Management

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Heat is a waste product of all metabolic processes and muscular activity, so the living body constantly generates it. Unlike the reptiles and lower animals, humans, as warm-blooded creatures, seek to preserve a constant body temperature independent of that prevailing in the environment. This means that heat production must constantly equal the amount of heat lost from the body. It is a remarkable fact that the thermostat of every individual is set around the same temperature 98.4 degrees F (37degreesC). This is not a rigid measure however, and there are slight variations such as the diurnal peak (around 99 degrees F) in late afternoon and trough (98 degrees F) in the early morning, a fall followed by a rise around ovulation in the woman's menstrual cycle, and a rise in muscular exercise (it can go up to 103 degrees F in extreme exertion).

When the body temperature is lower than the level 'set' by the thermostat in the hypothalamus, then one feels cold (no matter how high the thermostat is set), and measures are taken to generate more heat and to conserve that produced. There may be a voluntary increase in metabolic rate through exercise (running about, stamping one's feet, etc), or involuntarily through shivering. Blood flow is reduced from the skin (making it pale or cyanosed), so cutting down the major heat outlet, and clothing is increased (in animals the hairs are raised to thicken the insulating layer - the vestiges of this response account for our 'goose-pimples'). If there is no illness heat production may be raised by eating more food as well.

When the body temperature is higher than the level 'set' by the thermostat then one feels hot (no matter how low the thermostat is set), and measures are taken to lose more heat from the body. There is increased blood flow to the tissues immediately under the skin, a phenomenon marked by blushing. The circulation in this area is clearly designed as a radiator, there being much more circulatory capacity than is needed by the tissues themselves. We tend to aid the process of heat loss by removing excess clothing as well. Now skin radiation is perfectly adequate for most resting purposes, and provided ambient temperature does not exceed 90 degrees F, or there is no need for other measures. However, if the air is moist, there is no draught, there is muscular exertion, or there is high body temperature, then the cooling process is markedly increased by the production of moisture, to cool as it evaporates. Sweating thus signifies that the body is engaged in losing a prodigious amount of heat, at least in normal heated circumstances (there exists so-called 'cold sweat' and the draining loss that marks debilitated conditions, in neither case are the circumstances likely to be confused with the sweating of genuine heat loss).

It thus becomes possible to put the following interpretations onto readily

observed symptoms:

a) Feeling cold means that the body temperature is lower than the thermostat setting, and in normal circumstances is therefore moving up;

b) Feeling hot means that the body temperature is higher than the thermostat setting, and in normal circumstances is therefore moving down;

c) Pale, cyanosed skin over the whole body (rather than on just the hands for example) means that the body is setting about attempting to raise its Temperature; this is even more the case with shivering;

d) Flushed skin, and especially sweating means that the body is setting about trying to lower its temperature.

We can now use this information to great advantage in the management of the major destabilization of body temperature: the fever.

In its typical form, fever begins with an invasion into the body. This event results in the production either directly by the pathogen, or indirectly by the assaulted tissues, of a chemical with the power to raise the hypothalamic thermostat upwards (called either exogenous or endogenous pyrogen). From its resting setting of say 98.4 degrees F, the thermostat might be set to 102 or 104 degrees F for example.

Most often nothing else happens, beyond the normal defensive responses down at the site of the invasion.

However, the situation is now that the 'desired' body temperature is considerably higher than the actual temperature. The subject begins to feel cold (if the difference is great, or the subject is past adolescence, then this phase is often accompanied by an almost moribund listlessness and sluggishness); there will often be shivering, and a need for warm clothing and drinks. For other reasons there is often a parallel feeling of nausea, anorexia, or other symptoms at this time, with growing weakness and tiredness, all directing the sufferer to bed.

The temperature begins to rise accordingly, towards what the body sees as the norm. This rise is very useful under the circumstances; at around 101-102 degrees F the reticuloendothelial system that provides the bulk of the humoral defenses at these early stages is at its most active, the circulatory system becomes highly charged in general, and the lymphocytes also are more rapidly primed. By contrast the usually cold-loving pathogens are at a distinct disadvantage. The body can begin to 'cook' them out.

When actual body temperature accords with that set by the thermostat, the sufferer feels relatively comfortable, although other symptoms may interfere.

However, when the invasion is sufficiently checked that the source of pyrogen is significantly reduced, the hypothalamic thermostat begins to return towards its normal setting. Now, the actual body temperature is higher; the subject begins to feel hot, gets flushed, kicks off bedclothes, comes out in perspiration, and often gets restless and irritable (in children one can get convulsions) compared with the withdrawn listlessness of the rising phase. Along with the excretion from the sweat glands, there is usually a noticeable increase in urine production and even bowel activity, compared with a relative lack of eliminations earlier. It is as if the body has fulfilled its main defense tasks, with all exits stopped up, and is now concerned with opening the oven and flushing out the debris, it is a time for eliminations.

The temperature returns to normal, and after a variable period of convalescence to recover ones energies, with care the problem will have passed completely, and the body will have notched up another mark in the development of its resistive capacities.

This is a highly stylized scenario. There are most often variations in the story: there may be several peaks of temperature as initial sorties are attended with only partial success: other symptoms of the condition, such as enteric disturbance, central nervous involvement, or respiratory distress, may make their own contribution to the syndrome. However, the landmarks are most often still recognizable, and a constructive therapeutic approach can be designed in the great majority of cases, at least with a little practice.

What approaches are there? The simplest, and the most attractive in the conventional mind, is simply to abort the whole uncomfortable business at the earliest opportunity. The aspirin for example quite simply turns down the thermostat in the hypothalamus, reversing the effect of any pyrogen. The fever stops before it starts. Perhaps instead a course of antibiotics will be prescribed. This is a little more reasonable, but not much. True it is the source of the pyrogen, the infecting presence, which is eliminated; but the body's defenses are thus prevented from flexing; a defense posture that depends for its efficacy largely on practice in the field is not allowed to develop its internal co-ordinations. In short the body becomes less and less able to look after itself; more antibiotics are needed the next time. In previous generations, the conventional practice was even more damaging; the aim faced admittedly with some fearsome illnesses, was to 'kill' the fever, hopefully before the rest of the body was damaged. The side effects of treatment with the mineral poisons make the modern iatrogenic diseases

seem quite pale by comparison. All these allopathic measures have in common the desire to suppress the fever, in the belief that it is the fever and its associated symptoms that is the disease, the intervenient, uncomfortable, dangerous visitation upon a passive sufferer.

The traditional view is that fever is a sign of vital resistance. The nature of the pathogen would be described differently in different cultures and was most often seen as climatic excess, an abuse in lifestyle, or the result of a malevolent denizen from the environment. None of these concepts is incompatible with an enlightened overview of the phenomenon in modern terms, as this course should hopefully demonstrate. The obvious therapeutic priority is certainly the same, as discovered anew by Samuel Thomson (page 3): to support the vital resistance in its hour of trial, and to reduce only the wilder excesses of its battle, for the comfort and possibly well being of the patient. Herbal remedies were seen to have a particular facility for such a task. How can we see the job today?

In general, and other things being equal, it should be accepted that the aim of the fever response is to attain a body temperature of around 101-102 degrees F for as long as it is necessary to accomplish the removal of irritation. The primary aim of management should be to help it in this task, while yet making the patient as comfortable as possible and keeping a close eye on possible dangerous complications.

The first item necessary is a clinical thermometer. With regular readings of actual body temperature it is then easy, by having regard to the other symptoms discussed above, to assess where the thermostat is set. For example if the temperature reads 102 degrees F, but the patient is still cold, moribund and shivering, then it can be assumed that the temperature is still going up. Cooling measures will need to be instituted. On the other hand, one can relax if the temperature is 103 but the patient is hot and sweating and restless; the chances are that the actual body temperature is higher than the thermostat and moving down to meet it.

Cooling may be achieved by sound nursing care; wiping the face with a tepid wet cloth will have a significant effect on its own; a more thorough application (provided this is done out of draughts) will do much more, and immersion in a tepid bath can do wonders in extremis, again provided that secondary chills are avoided. Herbal remedies are of the 'hot in the first degree' type, the diaphoretics, that promote perspiration (see page 35). The most gentle varieties, like yarrow or boneset for example, can be used almost to demand to control body temperature. Almost all such remedies have additional properties that influence their selection in particular cases; some have a tonic effect on digestion, very valuable when there is often a degree of stagnation in the gut; others will help with a congested

respiratory system; most have relaxant properties helping to limit spasms and tensions. Most will be reviewed individually in the *Materia Medica*.

If a febrile condition has lasted for a long period without resolution, it is likely that the ability of the body to mount a proper response is at fault. Under such conditions it is possible that measures to actually enhance the process might be considered. These could range from the Thomsonian idea of therapeutically raising the temperature with cayenne and other 'hot in the third degree' remedies or with the use of sweat lodges (such might be applicable if there were signs that body temperature was insufficiently high and/or falling prematurely), to treatment that body temperature was insufficiently high and/or falling prematurely, to treatment of eliminatory functions (bowels, urinary and lungs particularly) or the use of herbal 'anti-microbial' such as Echinacea. There are many cases where these measures would be useful; the chronic febrile condition like glandular fever is very common in modern times, and aspirin-antibiotic suppression of the robust response is endemic.

There will very often be the need for other remedies specifically for supporting the body functions in other ways, and to limit damage. There is also the need to be aware of those circumstances that warn of danger. For example, the pulse rate usually goes up proportionally with the body temperature; if the rate is significantly slow for the temperature, suspect meningitis or encephalitis. One would watch for a cough that turned to producing rusty-colored phlegm or blood (pneumonia or worse); for stiffness of the neck and spine during a 'flu' (meningitis or polio); for excessive diarrhea threatening fluid and electrolytic status, excessive vomiting for the same reasons, and any untoward pain, skin condition or other complication. For practical purposes one would need to know how to recognize the main infective or modifiable infections, so as to take any necessary isolation precautions and so on (other legal considerations may transform all of what is said anyway). Further one should be aware of the febrile symptoms that can accompany non-infectious causes, and should always be aware of the wider presentation so as not to miss more complex problems. There should be some awareness of the different management techniques used in the very young, which are in any case more prone to hyperthermia anyway.

All these qualifications are to emphasize the practical limitations to plunging into fever management personally without proper resources or back up. The object of this exercise has been really to provide a different perspective in a common problem - to underline what traditional principles mean in practical terms.