



REVIEW ARTICLE

Yin and Yang Surfaces: An Evolutionary Perspective



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Abstract

A search of the Chinese medicine literature reveals several conflicting explanations of the division of the body into yin and yang surfaces. This paper attempts to clarify this basic concept and reconcile the differing descriptions of it through an exploration of material from other disciplines. A remarkable similarity exists between the surfaces on the human body that are defined by the pathways of the yin and yang meridians and those that have evolved from the ventral and the dorsal aspects of early vertebrate structure. Many of the evolutionary changes described have parallels in our embryological development and are evident in the underlying anatomy of our limbs. The degree of convergence between the two descriptions strongly supports the definition of the yin and yang surfaces as those traversed by the yin and yang meridians. It also goes a long way towards reconciling the conflicting definitions found in the literature. Finding a solution to this question of yin and yang surfaces that is based on anatomy and evolutionary theories has several advantages. It can throw light on differences in the clinical effects of points on the yin and yang meridians and enable the identification of anomalies in the pathways of the main meridian network.

1. Introduction

The concept of yin and yang representing the two archetypical or universal polarities [1] is a fundamental principle of Chinese medicine [2]. It is particularly relevant to the practice of acupuncture.

On the whole, the two terms are applied in a coherent and consistent manner. For instance, when applied to the whole body, the top is yang, whereas the bottom is yin [3,4]; the inside is yin, whereas the outside is yang [4,5]; the zang or solid organs are yin compared with the fu or hollow organs, which are yang [6,7].

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The concept of yin and yang is also often applied to the surface of the body [3,8–10]. However, a review of the literature reveals major inconsistencies in the way this is described in Chinese medicine. The main variations found are as follows:

- The back is yang and the abdomen is yin. This is the earliest description found in the Chinese medical literature. It appears in the Su Wen portion of the *Huang Di Nei Jing*, the foundation text of Chinese medicine [5].
- The back is yang and the chest and abdomen are yin [4]
- The back of the body is yang and the front of the body is yin. This is usually described in terms of the obvious meanings of front and back [8,9]. That is, when standing straight with the arms hanging by the side and the palms facing forward, the yin surface is everything that is facing forward, or what we can see of ourselves when looking into a full-length mirror. The yang surface is everything that we cannot see. According to this description, the face, chest, abdomen, front of the arms, palms, front of the legs, and the top of the feet are all at the *front*.
- Using the original meanings of yin and yang, which referred to the shady and sunny sides of a hill [11], the yang surface is that on which the sun falls when we are bent over working or on all fours [12]. The yang surface has the darker and hairier skin, which is more exposed to the sun, whereas the yin surface has the softer, paler, and less hirsute skin.
- The yin surface of the body is the area traversed by the yin meridians and the yang surface by the yang meridians [4,8,13,14]. This is the more common description in the contemporary literature.

It is difficult to reconcile these descriptions. For instance, every yang meridian begins or ends on the face above the mouth but this area clearly faces the front, away from the sun. The abdomen and chest face the front but have a yang meridian, the stomach, running across them. The dorsal surface of the feet and the front of the thighs, which are dominated by yang meridians, face the front. The soles of the feet face backward or downward but are dominated by a yin meridian, the kidney.

It is not unusual in Chinese medicine for inconsistencies to occur in the various theories postulated in this regard. Some authors explain this tendency by noting that traditional Chinese philosophy embraces paradox [15,16], whereas others put it down to its syncretic nature [17], which means that new theory can be added without being integrated with other parts of the theoretical framework. By contrast, a synthetic approach strives for internal consistency so that if new findings or new theory conflict with an accepted theory, the theoretical framework must be modified to incorporate the new material.

In the case of the yin/yang surfaces, a more synthetic approach that tries to understand the rationale for such a division can clarify its potential clinical utility and help reconcile the different definitions. One way to do this is to examine the body from the perspective of dorsal and ventral derivations.

There is a striking and, in all likelihood, a clinically meaningful convergence between the yin and yang surfaces

of the body as defined by the pathways of the yin and yang meridians and the surfaces that have evolved from the ventral and dorsal surfaces of early vertebrate structure. These evolutionary changes are, to a significant degree, mirrored by parallel changes in our own embryological development. This paper is an exploration of this convergence and a discussion of its implications.

Although databases PubMed, ScienceDirect, Embase, and ProQuest were searched using the terms “yin/yang surface” and “evolution of dorsal and ventral surface,” very few useful references were found. Most papers on which this review was based were found by a manual search of texts of Chinese medicine, evolution, and anatomy.

The yin and yang surfaces are defined by the pathways of the yin and yang meridians.

Most modern texts describe the yin surface as that traversed by the yin meridians [3,18,19], and the yang surface as that traversed by the yang meridians. It is not easy to define these in terms of front and back and they are usually described in terms of their orientation and visual characteristics. The yin meridians traverse the softer, paler, less hairy regions of the body, which are found on the front of the trunk and the inner surface of the limbs, abdomen, chest, and throat. The yang meridians traverse the rougher, darker, hairier surfaces that are found on the posterolateral aspect of the limbs, the back of the trunk, and the head. The yang meridians all begin or end on the face above the mouth, and so this area must also be regarded as part of the yang surface. All referenced authors note that the stomach meridian represents an exception in its pathway over the abdomen and chest.

Although there is no clear reference to the boundaries between the yin and yang surfaces in the literature, their location is determined by the main meridian pathways and can be described with some precision with reference to the underlying anatomy. The following descriptions represent the author’s own assessment.

2. Arms

The yin surface is the anteromedial aspect. This includes the palms and the softer, paler, and less hairy aspect of the forearms and upper arms. The yang surface is the posterolateral aspects that tend to be tougher, darker, and hairier.

The boundaries between the yin and yang regions will be between the large intestine and lung meridians and between the small intestine and heart meridians. In the hands, they can easily be seen as the junction of the red and the white skin very close to the pathways of the lung and small intestine meridians.

In the forearms, the division is more in the texture and hair distribution but is still clear to simple visual inspection. The boundaries can be felt in the underlying anatomy as the sharp borders of the radius and ulna. Once again, it is found very close to the lung and small intestine meridians.

In the upper arm, the division is less clear to the eye but can be traced in the underlying tissues as the medial and lateral intermuscular septa on either side of biceps brachii. The yin surface covers the area between the lateral and medial intermuscular septa, which includes the surface over biceps.

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