

The Comparison of Maternal Blood SFF With Umbilical Cord Blood^x

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Summar: Grofth of fungi is inhibited by some factor present in human serum. The exact nature and the role of Serum Fungistatic Factor (SFF) is controversial. In this study transplacental passage of SFF was investigated. Fresh, steril sera of 20 mother and umbilical cords of their babies were added to SDA at 20 % concentration, and *T. mentagrophytes* inoculated. These cultures were used to assay the inhibitory capacity of these sera. We could not find any correlation between maternal and cord sera and concluded that SFF is not transferred through placenta.

Key words: Serum fungistatic factor, serum inhibitory factor, SFF, SIF.

The fungistatic activity of normal serum has been demonstrated both in vitro and in vivo by several investigators (1,2,3,4,5,6,7).

This activity is named Serum Fungistatic Factor (SFF) or Serum Inhibitory Factor (SIF). The restriction of dermatophyte growth to keratinized tissue is believed by some authors to be due to mainly this factor (1,5).

Both the existence and significance of this factor are highly controversial in light of many conflicting reports.

Although some authors suggested that SFF is present at birth and does not change significantly with age (3), the others have suggested that SFF is greatly diminished or completely absent in blood specimens obtained from umbilical cords and from infants during the first 8-10 weeks of life (6,7).

In this study we planned to compare the SFF of maternal blood with that of umbilical cord blood.

Material and Methods

Maternal and cord blood specimens were centrifuged and used immediately in steril conditions.

An agar diffusion dermatophyte culture system was used to assay the inhibitory capacity of these sera.

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Mentagrophytes (which was isolated from a patient with *T. pedis* in our laboratory) was grown for 2 weeks and spores were prepared by agitation with glass beads and suspension was used according to the method of Carlisle (2).

Three 10 mm wells were cut in each plate. One well was filled with 50 % cordserum , the second was filled with maternal serum and the third served as control, Heat inactivated FCS and saline were substituted for serum. Dishes were incubated at room temperature for 5 days and zone of inhibitions (no visible growth) were measured in two diameters at 90° to each other.

Results

Growth rapidly appeared on the third or fourth day as a faint, white, fluffy aerila mycelium. By the fifth day the zones of inhibition were quite distinct.

A total 40 sera from mothers and their babies were tested (Table 1).

Table I. Mean Diameter of Zone of Inhibition (mm)

Case No	Maternal Blood	Cord Blood
1	20	6
2	21	8
3	16	15
4	18	16
5	16	16
6	20	14
7	21	18
8	18	14
9	20	7
10	18	14
11	16	18
12	18	16
13	15	18
14	22	10
15	16	18
16	19	12
17	20	14
18	22	8
19	16	18
20	18	15
x	18.5	13.75
Sd	2.18	3.958
t _H 4.70	t _T 2.71	p < 0.01

Maternal SFF was found significantly higher than cord blood SFF.

Discussion

Blank et al (1) hypothesized SFF accounted for the restricted pathogenicity of dermatophytes. According to this hypothesis, individuals deficient in the SFF would not limit the infection to the keratinized tissues. On contrary to this hypothesis, some authors were unable to establish any relationship between the fungistatic activity of an individual's serum and a history of dermatophytosis (3,5,6,7).

The importance of human serum as a host resistance mechanism modifying susceptibility to dermatophytosis has not been clearly defined yet.

King et al (4) reported that SFF was unsaturated transferrin. The mechanism of this inhibition is through transferrin's ability to bind iron. Iron is an essential micronutrient for the growth of dermatophytes. However, identification of transferrin as SFF does not rule out the possibility that other specific or nonspecific factors could be present in serum which may also be inhibitory to fungi.

Some authors reported that SFF was present at birth and did not change with age (3), but others suggested that SFF of umbilical cord blood was diminished or completely absent (5,6).

In this study we could not observe any correlation between the SFF of maternal blood and cord blood. SFF of umbilical cord blood was significantly diminished. As a result we suggested that SFF could not be transferred through placenta.

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