That is, the correct work of Wheldon on heat loss of non-evaporative heat proportional approximately 0.6:0.4, radiant: convective. Then the equation:
\[ T_{operative} = 0.6 T_{radiant} + 0.4 T_{air} \]

is given. Only \( T_{radiant} = T_{air} \), both the statements be true. That the first statement is correct is shown by the work of Wheldon and my own using different methods. The correct equation would then be:

\[ T_{operative} = 0.65 T_{air} + 0.35 T_{radiant} \]

That is, heat loss is proportional to thermal gradient so non-evaporative heat loss \( = (hr + hc) (T_{skin} - T_{operative}) = hr (T_{skin} - T_{radiant}) + hc (T_{skin} - T_{air}) \), where radiant heat loss \( = hr (T_{skin} - T_{radiant}) \) and convective heat loss \( = hc (T_{skin} - T_{air}) \). Since in Hey and Mount’s paper \( T_{skin} - T_{radiant} = 5.3^\circ \) and \( T_{skin} - T_{air} = 2^\circ \) if \( hr (T_{skin} - T_{radiant}):hc (T_{skin} - T_{air}) = 0.6:0.4 \) the hr:hc is 0.36:0.64 or approximately 0.35:0.65.

In using Wheldon’s hr and hc it is important to remember that \( T_{radiant} = 0.4 T_{matteis} + 0.6 T_{wall} \) and \( T_{matteis} \) is approximately equal to \( T_{air} \).

Michael H LeBlanc
University of Mississippi Medical Center, Jackson, Mississippi

Dr Sauer and co-workers comment:
The point raised by Dr LeBlanc concerns the application of the optimal temperature as found by us in an incubator with an equal air and wall temperature to the clinical setting with different air and wall temperatures. The equation:

\[ T_{operative} = 0.4 T_{air} + 0.6 T_{wall} \]

discovered by Hey from the concept of operative temperature developed by Winslow et al. From studies using a manikin in an incubator Wheldon calculated a relation between the heat transfer coefficient for convection and radiation of 0.6:0.4. Which of the two equations is being used, however, is of limited clinical importance: the calculated environmental temperature might differ by 0.5°C. From our study the optimal environmental temperature can be estimated with a standard deviation of 0.7°C using simple clinical data. This variation might be related to the effect of posturing. From Wheldon’s data it can be calculated that the optimal environmental temperature might change by 0.5 to 1°C when the posture is changed from a fetal to a spreadeagle position.

References
and at necropsy hepatocellular carcinoma was found. This may indicate a serious prognosis for these patients.

Finally, I should like to point out that the statement: 'Galactosaemia was excluded by finding normal activity of red cell galactose-1-phosphate uridyl transferase' does not exclude the possibility of galactokinase deficiency.

References

Role of aldosterone in late hyponatraemia

Sir,

I read with interest the report by Al-Dahhan et al on the beneficial effect of salt supplementation on the clinical course of low birthweight preterm infants. On the basis of the lower urinary potassium/sodium ratio seen in supplemented preterm infants, the authors concluded that 'salt supplements cause some suppression of aldosterone secretion' and 'the tube is capable of responding to the hormone'.

This statement may give the false impression that the role of aldosterone in the development of late hyponatraemia has not yet been studied. In fact, in recent years several clinical studies have already been carried out in preterm infants showing that:

1. In response to the renal salt wasting, negative sodium balance, and fall in the plasma sodium value, excessive increase occurs in the activity of the renin-angiotensin-aldosterone system.

2. The increased aldosterone secretion rate results in a rapid improvement of distal tubular sodium reabsorption and contributes to the re-establishment of positive sodium balance.

3. By giving supplemental sodium the activity of the renin-angiotensin-aldosterone system may be suppressed even to the degree seen in neonates of the same postnatal age.

The results presented by Al-Dahhan et al, therefore, provide only indirect evidence to confirm these previous observations.

References

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