Difference of Intensity of Heart Sounds Expressed Numerically. Preliminary Report*.

Magnoscopic Investigation 2nd Report.

By

Akira Sato and Yadori Moriwaki.

(佐藤 彰)

(森脇 菱)

(From the Department of Pediatrics, Faculty of Medicine,
the Tohoku Imperial University, Sendai.

Director: Prof. A. Sato.)

In the 1st Report¹⁾ of the Magnoscopic Investigation, Nukiya ma and Sato, one of us, described "micro rales", "latent bronchial breathing" and "latent bronchophonia", further "micro-friction" as new auscultatory phenomena. In the present paper we desire to express the difference of heart sounds numerically.

Method used.

Apparatus: the magnoscope and an attenuator connected to it.

The pick-up of the magnoscope was applied over one of the two heart orifices to be compared with each other, and then over the other orifice. Then the pick-up was applied over the orifice of the louder sound and the dial switch of the attenuator was turned until the louder heart sound became almost equal to the lesser heart sound over the other orifice.

Then the figures (=the number of decibels) were read and noted.

* Read at the General Meeting of the Japanese Pediatric Society, held at Niigata, April 1935.

1) A. Sato and H. Nukiya ma, Tohoku J. Exp. Med., 1940, 38, 45.

Actual Examples.

A Aortic dB* ===== deci Bels
 M Mitral
 P Pulmonic
 A ===== P + 2 dB A > P by 2 dB
 A ===== P - 2 dB A < P by 2 dB

Juvenile patients:—

Case 1. S.M.	A ===== P + 1 dB	A ===== M + 3 dB
Case 2. M.C.	A ===== P + 0 dB	A ===== M + 9 dB
Case 3. S.I.	A ===== P + 0 dB	A ===== M + 0 dB
Case 4. C.I.	A ===== P + 3 dB	A ===== M - 12 dB
Case 5. N.H.	A ===== P + 1 dB	A ===== M - 9.5 dB
Case 6. T.S.	A ===== P - 7 dB	A ===== M - 14 dB

Healthy adults:—

1.	A ===== P - 1 dB	A ===== M - 3 dB
2.	A ===== P - 0 dB	A ===== M - 9 dB
3.	A ===== P - 0 dB	A ===== M + 0 dB
4.	A ===== P - 3 dB	A ===== M - 12 dB
5.	A ===== P - 1 dB	A ===== M - 9.5 dB
6.	A ===== P + 7 dB	A ===== M - 14 dB
7.	A ===== P - 2.5 dB	A ===== M - 12.5 dB
8.	A ===== P + 5 dB	A ===== M - 1 dB
9.	A ===== P - 2 dB	A ===== M + 10 dB
10.	A ===== P + 4 dB	A ===== M - 10 dB
11.	A ===== P + 2 dB	A ===== M - 10 dB

Healthy children:—

1. S.K.	A ===== P - 4 dB	A ===== M - 7 dB
2. K.M.	A ===== P + 9 dB	A ===== M - 15 dB
3. E.D.	A ===== P + 3 dB	A ===== M - 9.5 dB
4. W.N.	A ===== P + 7.5 dB	A ===== M - 8 dB
5. I.K.	A ===== P - 5 dB	A ===== M - 3 dB
6. S.T.	A ===== P + 5 dB	A ===== M - 5 dB
7. K.D.	A ===== P - 5 dB	A ===== M - 13 dB
8. M.Y.	A ===== P - 2.5 dB	A ===== M - 10 dB
9. T.H.	A ===== P + 2 dB	A ===== M - 9 dB
10. N.M.	A ===== P + 0 dB	A ===== M - 6 dB
11. K.N.	A ===== P + 2.5 dB	A ===== M - 11.5 dB

* Cf. Table accompanying Magnoscopic Investigation 3rd Report Tohoku J. Exp. Med., 1939, 38, 56.

Summary.

It was proposed to express the difference of intensity of heart sounds numerically (though only comparatively) by the combined use of the magnoscope and an attenuator connected to it.

As already explained in the 1st Report, the magnoscope was invented and constructed not so much for the heart sounds as for the breath sounds. So the present paper is rather a by-work.

Prof. Akira Sato.