IS-014  Growth of diaphragm after repair of congenital diaphragmatic hernia: Special reference to lung V/Q scan and scoliosis

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Recent advances have gradually improved an outcome of high-risk congenital diaphragmatic hernia (CDH). However, the growth and function of repaired diaphragm have not been well elucidated, which may participate in pulmonary function and chest-wall deformity. We measured the lower lung diameter at the top of the diaphragm (LLD), diaphragmatic diameter (DD), height (DH) and the ipsilateral/contralateral ratio (i/c) of those on the postero-anterior plain chest radiograph using a PACS.

Thirty-six CDH children (left-sided 32, right-sided 4) aged 10.4 ± 4.8 years underwent clinical evaluation including lung V/Q scan. As a control, chest radiograph of 89 patients with minor surgery aged 9.0 ± 5.5 were analyzed.

LLD, DD and DH in controls were significantly correlated with age, then each value was expressed as % of age-based estimated values. Ipsilateral LLD (mean 89.9%) and DD (mean 91.0%) were decreased. The perfusion of ipsilateral lung was best correlated with ipsilateral DD (r=0.49). Ipsilateral V/Q ratio was normalized with an increase in LLD (r=0.49). Five patients had pectus excavatum, and 6 had scoliosis (Cobb angle > 10 degree). Patients with scoliosis indicated decreased ipsilateral LLD, DD, DH and i/c of those. Cobb angle was best correlated with i/c of DD (r=0.80).

These results indicated that the growth of repaired diaphragm might be impaired, which participated in decreased perfusion of the ipsilateral lung and scoliosis and that LLD and DD are simple but useful parameters in the follow-up of patients with CDH.