

## Asthma

Acta Physiol Hung. 2003;90(4):327-34.

### **The effect of the pulsatile electromagnetic field in children suffering from bronchial asthma.**

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From the bibliography it is well known that pulsatile electromagnetic field has an anti-inflammatory and analgesic effect. It causes vasodilatation, myorelaxation, hyperproduction of connective tissue and activation of the cell membrane. Therefore our aim was to study the possible therapeutic effect of pulsatile electromagnetic field in asthmatic children. Forty-two children participating in this study were divided in two groups. The 1st group consisting of 21 children (11 females, 10 males, aged 11.8 +/- 0.4 yr) was treated by pulsatile electromagnetic field and pharmacologically. The 2nd group served as control, consisting also of 21 children (11 females, 10 males, aged 11.7 +/- 0.3 yr) and was treated only pharmacologically. Therapeutic effect of the pulsatile electromagnetic field was assessed on the basis of pulmonary tests performed by means of a Spirometer 100 Handi (Germany). The indexes FVC, IVC, ERV, IRV, FEV1, FEV1/FVC%, MEF75,50,25, PEF, PIF and the changes of the flow-volume loop were also registered. The pulsatile electromagnetic field was applied by means of the device MTU 500H, Therapy System (Brno, Czech Republic) for 5 days, two times daily for 30 minutes (magnetic induction: 3 mT, frequency: 4 Hz as recommended by the manufacturer). The results in children of the 1st group showed an improvement of FVC of about 70 ml, IVC of about 110 ml, FEV1 of about 80 ml, MEF75 of about 30 ml, PEF of about 480 ml, PIF of about 550 ml. The increases of ERV, IRV and FEV1/FVC and decreases of MEF25,50 were statistically insignificant. The results in the 2nd group were less clear. The flow-volume loop showed a mild improvement in 14 children. This improvement in the 2nd group was less significant. The clinical status of children and their mood became better. We believe that the pulsatile electro-magnetotherapy in children suffering from asthma is effective. On the basis of our results we can recommend it as a complementary therapy.

Bratisl Lek Listy. 2000;101(2):71-7.

### **The sensitivity of tussiphonography for assessing the effectiveness of treatment.**

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Our previous studies have demonstrated that tussiphonogram is suitable not only for the detection of pathological condition in the respiratory tract but also for treatment effectiveness assessment. The purpose of this study was to evaluate the possibilities of tussiphonography in detection of already little pathological changes in the airways and lungs. Therefore the changes of voluntary cough sound indexes were compared with pulmonary function tests in selected group of asthmatics before and after a pulsatile electromagnetic therapy in which the effect of therapy on pulmonary function tests was minimal. After magnetotherapy in 18 patients with increased expiratory forced lung capacity by 7.3% and increased peak inspiratory flow by 31.7% in average the voluntary cough sound intensity decreased by 37.8%, the sound duration shortened by 11% and the sound pattern showed the tendency to normalization. The improvement of mentioned cough indexes was absent in 17 patients who were treated by magnetotherapy too, but at the same time suffered from respiratory viral infection and in 22 patients treated only with climatotherapy and antiasthmatics. Changes of flow-volume loops in patients were not in the close relation to other followed indices. The correlation analysis showed a functional connection in relative differences of cough sound indices and some pulmonary function tests. The results confirmed the suitability of tussiphonography to indicate even mild pathological changes in respiratory tract. (Fig. 4, Ref. 21.)