



Physician connect

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Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you '**Physician connect**' which contains latest and interesting news in the field of Medicine.

This issue contains

- Pulmonary Rehabilitation with Music Therapy: A randomised interventional study
- Apgar Score and Risk of Neonatal Death among Preterm Infants
- The Feasibility of Assessing Early LV Geometric Change in Diabetes and Hypertension

Should you require any specific article or medical information, please feel free to contact us at

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Looking forward to your valuable feedback

Best Regards,

Medical Team, Micro Labs Limited

Pulmonary Rehabilitation with Music Therapy: A randomised interventional study

Asthma is an important global health problem affecting all age groups. The prevalence of asthma is increasing in many countries. Due to its chronicity and periodic exacerbations, asthma places a burden on health care systems, results in loss of productivity in the workplace, and affects the quality of life in patients and their families. Much emphasis is being placed on the role of music therapy as an easy-to-use, non-invasive and relatively cheap method of asthma treatment. The objective of this interventional double-blinded randomised controlled trial was to assess whether music therapy, as a complementary modality to pulmonary rehabilitation, can help to improve respiratory drive, asthma control and quality of life in patients with asthma exacerbation.

Passive music therapy and its effects on the mental state of patients seem to improve the efficiency of the respiratory system

Hospitalized patients with asthma exacerbation enrolled in the study were randomly assigned to experimental (music therapy) or control (popular science programme) group. Both groups during hospitalization received standard pharmacotherapy accompanied by respiratory physiotherapy. Respiratory drive, asthma control, quality of life and serum cortisol in all participants were assessed at the beginning and at the end of their hospitalizations.

The experimental group consisted of 39 asthmatics and 34 subjects with asthma were assigned to the control group. During the hospitalisation, the levels of the inspiratory occlusion pressure for the first 0.1 second of inspiration (P0.1) decreased ($p = 0.004$) and the maximum P0.1 increased

($p = 0.041$) only in the experimental group. The serum cortisol level decreased in both groups ($p = 0.001$). The changes in asthma control and quality of life did not reach significant levels in either subject group.

Fig. 1: P0.1 expressed as mean $\pm$ SD (* $p=0.004$)

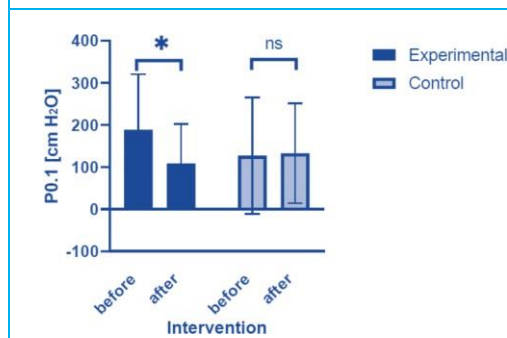
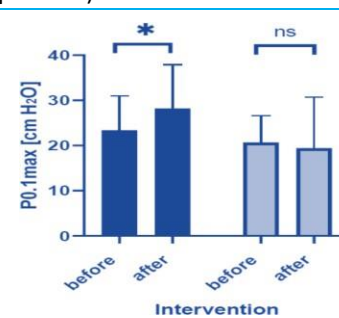
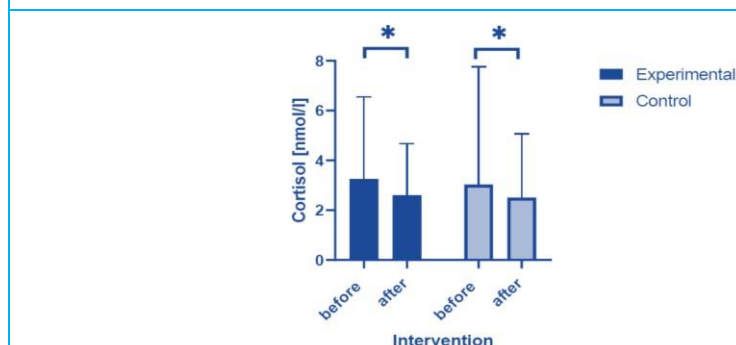


Fig. 2: P0.1max expressed as mean $\pm$ SD (* $p=0.041$)



Passive music therapy and its effects on the mental state of patients seem to improve the efficiency of the respiratory system. The results of this experimental study demonstrate that a complementary music therapy has beneficial effects on the treatment of asthma exacerbations in adults.

Figure 3: Serum cortisol level expressed as mean $\pm$ SD. (* $p<0.001$)



The results of this experimental study are an important voice in the discussion on the effectiveness of music therapy as a complementary modality for the treatment of asthma exacerbations in adults. The applied set of relaxation recordings, based on the previously examined musical preferences of this group of patients, proved to be an effective form of therapeutic influence. Passive music therapy, affecting the mental state of patients, seems to improve the efficiency of the respiratory system. The simplicity of its implementation and the low costs make this type of

therapy highly accessible, in view of the previously identified demand for relaxation methods in this group of patients.

Source: Śliwka A et al. Asthma. 2020 July ;1-18. doi:10.1080/02770903.2020.1789874

Apgar Score and Risk of Neonatal Death among Preterm Infants

Preterm birth (≤ 36 completed gestational weeks) is the leading cause of neonatal death, and the risk of neonatal death increases with the degree of preterm birth. However, other factors also influence the risk of neonatal death. In a systematic review of studies involving very preterm infants (≤ 31 completed gestational weeks), the risk of death was lower among infants with a normal birth weight for gestational age, female infants, infants receiving glucocorticoids prenatally, and infants with higher 5-minute Apgar scores.

Gestational age is the major determinant of neonatal death (death within the first 28 days of life) in preterm infants. The joint effect of

gestational age and Apgar score on the risk of neonatal death is unknown. Cnattingius et al. used a nationwide Swedish database to investigate associations between the risk of neonatal death and Apgar scores at 5 and 10 minutes and the change in the Apgar score from 5 to 10 minutes among preterm infants in analyses stratified according to gestational age.

Using data from the Swedish Medical Birth Register, we identified 113,300 preterm infants (22 weeks 0 days to 36 weeks 6 days of gestation) born from 1992 through 2016. In analyses stratified according to gestational age (22 to 24 weeks, 25 to 27 weeks, 28 to 31 weeks, 32 to 34 weeks, and 35 or 36 weeks), we estimated adjusted relative risks of neonatal death and

Apgar scores at 5 and 10 minutes provided prognostic information about neonatal survival among preterm infants across gestational-age strata

absolute rate differences in neonatal mortality (i.e., the excess number of neonatal deaths per 100 births) according to the Apgar scores at 5 and 10

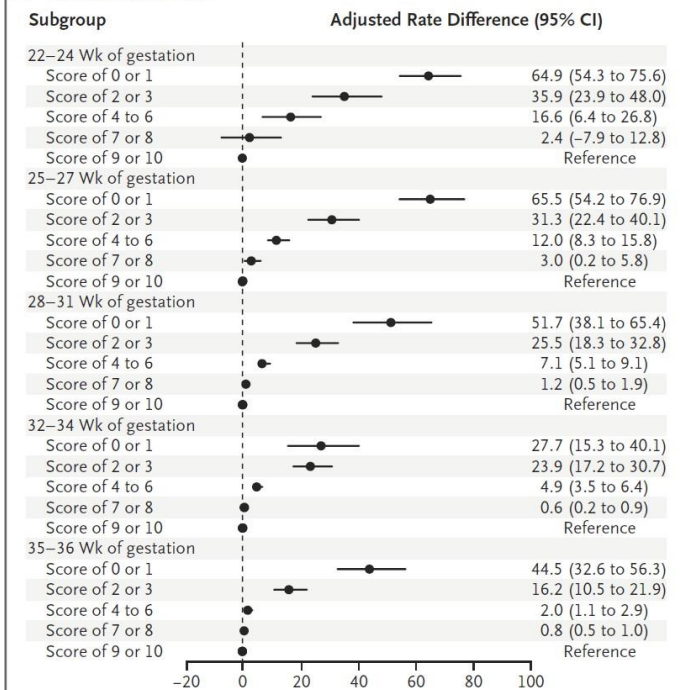
minutes and according to the change in the Apgar score between 5 minutes and 10 minutes. Scores range from 0 to 10, with higher scores indicating a better physical condition of the newborn.

There were 1986 neonatal deaths (1.8%). The incidence of neonatal death ranged from 0.2% (at 36 weeks of gestation) to 76.5% (at 22 weeks of gestation). Lower Apgar scores were associated with higher relative risks of neonatal death and greater absolute rate differences in neonatal mortality in all gestational-age strata.

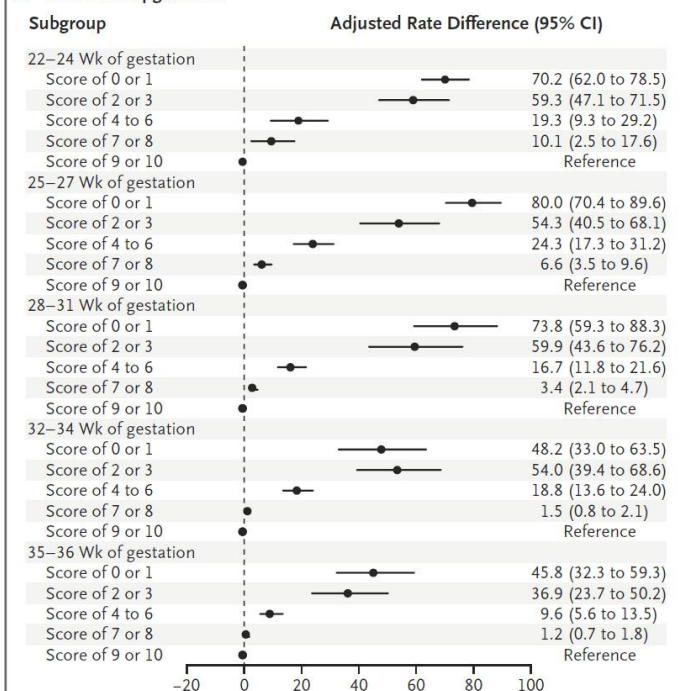
Among infants born at 28 to 31 weeks, the adjusted absolute rate differences according to the 5-minute Apgar score, with those who had a score of 9 or 10

serving as the reference group, were 51.7 (95% confidence

A 5-Minute Apgar Score



B 10-Minute Apgar Score



Gestational Age, Apgar Scores at 5 Minutes and 10 Minutes, and Adjusted Rate Differences in Neonatal Mortality.

interval [CI], 38.1 to 65.4) for a score of 0 or 1, 25.5 (95% CI, 18.3 to 32.8) for a score of 2 or 3, 7.1 (95% CI, 5.1 to 9.1) for a score of 4 to 6, and 1.2 (95% CI, 0.5 to 1.9) for a score of 7 or 8. An increase in the Apgar score between 5 minutes and 10 minutes was associated with lower neonatal mortality than a stable Apgar score. In this study, Apgar scores at 5 and 10 minutes provided prognostic information about neonatal survival among preterm infants across gestational-age strata.

Source: Cnattingius S et al. N Engl J Med 2020;383:49-57.DOI: 10.1056/NEJMoa1915075

The Feasibility of Assessing Early LV Geometric Change in Diabetes and Hypertension

Left ventricular hypertrophy (LVH) is commonly found in older adults, is associated with heart failure with preserved ejection fraction (HFpEF) and is a predictor for adverse cardiovascular outcomes. Early detection of LV geometric changes has attracted medical attention because it allows for earlier detection and treatment of myocardial changes potentially improving patient outcomes.

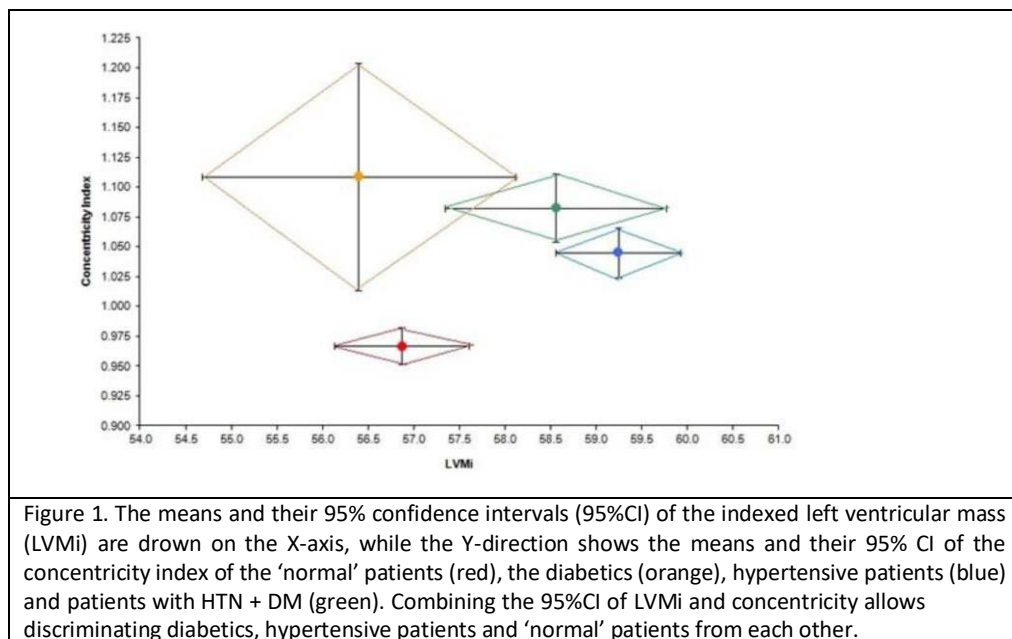
Recent studies have challenged the concept of hypertrophic remodeling as the dominant pattern in hypertension (HTN),

suggesting that eccentric remodeling was perhaps more prevalent than concentric remodeling. However, co-morbidities such as DM, may also confound remodeling patterns and may induce more concentric LV remodeling. Thus, there is conflicting data on early left ventricle (LV) remodeling in diabetes mellitus (DM) and hypertension (HTN). This study examines the feasibility of cardiac computed tomography angiography (CCTA) to detect early LV geometric changes in patients with DM and HTN.

Given the wide spread availability and increasing clinical use of CCTA, this measure can expand the diagnostic role of CCTA allowing the early diagnosis of adverse LV remodeling and better prognostication.

Using a large population without known structural heart disease, Walpot et al. sought to assess measures of early LV remodeling in patients with and without hypertension and diabetes. Consecutive patients (n = 5,992) who underwent prospective electrocardiography (ECG)-triggered (mid-diastolic) CCTA were screened. Patients with known structural heart disease or known LV dysfunction were excluded. Left ventricular mass (LVM), left ventricular mid-diastolic volume (LVMDV), and LV concentricity (LVM/LVMDV) were measured and indexed to body surface area.

A total of 4,283 patients were analyzed (mean age 57 ± 10.69 years, female 46.7%). DM, HTN, and HTN + DM were present in 4.1%, 35.8% and 10.6% of patients, respectively. Compared to normal patients, HTN and HTN + DM patients had increased LVM indexed to body surface area (LVMI) (56.87 ± 17.24 , 59.26 ± 13.62 , and 58.56 ± 13.09 , respectively; $P < 0.05$). There was no difference in LVMI between normal subjects and patients with DM (56.39 ± 11.50 , $P = 0.617$).



Concentricity indices were higher in patient with HTN (1.0456 ± 0.417 ; $P < 0.001$), DM (1.109 ± 0.638 ; $P = 0.004$), and HTN + DM (1.083 ± 0.311 , $P < 0.001$) than normal individuals (0.9671 ± 0.361). There was no overlap of

the 95% confidence intervals in the composite of concentricity indices and LVMi between the different groups.

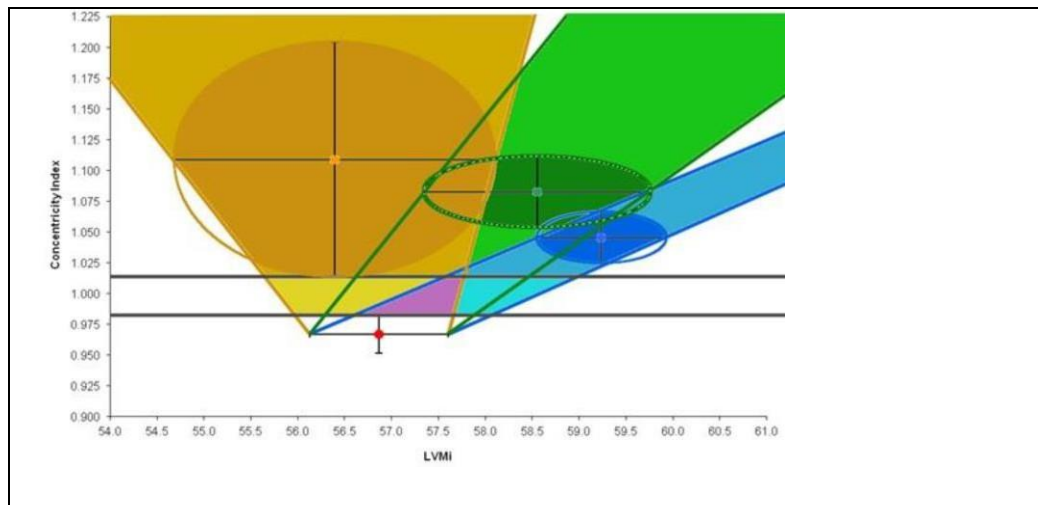


Figure 2: shows the remodeling paths of diabetics (orange), hypertensive patients (blue) and patients with hypertension + diabetes (green). The blue lines connect the lower and upper bounds of the 95%CI of the normal and hypertensive population. The same methodology has been repeated for patients with DM and patients with DM + HTN. The ellipses in darker orange, blue and green represent the area that connects the upper bounds of the 95% of the LVMi and Concentricity index of patients with DM, HTN and HTN+ DM respectively. The grey lines represent the grey zone between the upper and lower limit of the 95% CI of the concentricity index of the 'normal' subjects and diabetics respectively.

The CCTA concentricity index may have potential clinical applicability. Since concentricity is a ratio of the mass to volume, it does not need to be indexed to body habitus and avoids the controversy and limitations of indexing. This study indicates that CCTA concentricity index ≤ 0.98 can be used as a cut-off to exclude evidence of early abnormal LV remodeling. Given the wide spread availability and increasing clinical use of CCTA, this measure can expand the diagnostic role of CCTA allowing the early diagnosis of adverse LV remodeling and better prognostication.

Source: Walpot J et al. Am J Hypertens. 2020;33(6):496-504.
doi:10.1093/ajh/hpaa002



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