Schweizerische Hypertonie-Gesellschaft
Société Suisse d'Hypertension
Società Svizzera d'Ipertensione
Swiss Society of Hypertension

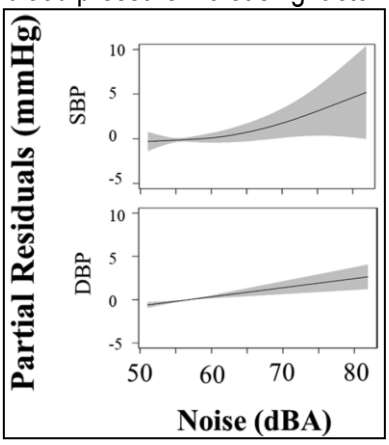
Hot from the hypertensive press
Short analysis of clinical studies that may change our practices in the field of hypertension
10/2021

HYPERTENSION GET'S "NOISY": NOISE EXPOSURE AND BLOOD PRESSURE

Optimizing blood pressure control by the control of noise exposure

Since many years, it is known that environmental factors modulate cardiovascular disease risk. Different studies reported that acute noise exposure is associated with an immediate increase of blood pressure (BP), which might remain elevated in the setting of permanent noise exposure. The study reported that urban noise exposure is not only associated with a higher blood pressure but also even with resistant hypertension. The latter relationship has so far not been described.

The authors used data from repeated BP measurements as well as medication data from participants of the Chicago Health and Aging Project ((n=6073, ≥65 years) and the Multi-Ethnic Study of Atherosclerosis (n=691 ,≥45 years). Using a spatial prediction model they estimated the noise exposure at the participant homes. They modeled BP values in relation to noise exposure and adjusted the modeling for different potential confounders including age, sex, as well as socio-demographic factors. They were able to evaluate over 16'000 BP measurements over an average duration of 4 years. They found that higher noise levels were associated with higher BP levels and a higher risk for treatment-resistance. They found that a 10-dBA higher residential noise level corresponded to 1.2 (95% CI, 0.1–2.2) mmHg higher systolic BD and a 1.1 mm Hg greater (95% CI, 0.6–1.7) diastolic BP. In addition, they found a 20% increased odds of treatment-resistant hypertension (odds ratio per 10 dBA (A-weighted noise levels in decibels): 1.2 [95% CI, 1.0–1.4], P=0.04). These results are in agreement with observations from different experimental and observational studies and fulfill most likely the criteria for causality. Urban noise hast to be regarded as a blood pressure increasing factor and a promoter of resistant hypertension. In view of the central role of an optimal BP control and the rather large effect of noise the data should encourage us to assess noise exposure in each and every patient in the hypertension clinic but also in the setting of any health check up.



Many readers might say that this US study is not relevant for the situation in Switzerland. Maybe this is correct for places like Turtmantal (latitude: 46.2426° / longitudinal degree 7.7042°) in deep winter, but not for most places in the highly populated and heavily noise polluted Swiss Mittelland or cities like Zurich or Geneva. In Switzerland, more than 1 million individuals are exposed to unhealthy levels of noise during the day and nighttime originating from traffic. There are national strategies defined to reduce unhealthy traffic noise exposure. Unfortunately, these strategies are not fully implemented and often not implementable. In this context, it has to remembered that not only traffic noise exposure is crucial but also the self-imposed noise over headphones on the go. Tell your patient to avoid noise exposure and he will enjoy a lower blood pressure and better overall health – at no cost. There are different smart phone apps available, which allow the monitoring of noise exposure. A highly appreciated self-monitoring strategy, which we recommended since many years to our hypertensive patients.

Reference:

D'Souza J, Weuve J, Brook RD, Evans DA, Kaufman JD, Adar SD. Long-Term Exposures to Urban Noise and Blood Pressure Levels and Control Among Older Adults. **Hypertension. 2021 Dec;78(6):1801-1808**. doi: 10.1161/HYPERTENSIONAHA.121.17708.

Prof. Paolo M. Suter, Swiss Society of Hypertension

30.11.2021