ABSTRACT

Objectives/Hypothesis
Diagnostic transnasal flexible endoscopy (TNFE) is a commonly used office procedure in otolaryngology. Currently there is a paucity of data on the impact of TNFE on physiologic parameters. This is relevant with the advent of office based endoscopic procedures. The goal of this study is to measure the impact of diagnostic TNFE on vital signs: systolic and diastolic blood pressure (SBP and DBP), heart rate (HR) and oxygenation (O2 sat).

Study Design
Prospective case control study – the patient is his/her control.

Methods
Vital signs were obtained at baseline, immediately after the application of neosynephrine, after the application of lidocaine, five minutes later, with the scope in the nasopharynx, hypopharynx, and upon completion of the procedure.

Results
Compared to the baseline data, there was a statistically significant increase in HR after the procedure (mean change 4.06 +/- 10.15 bpm, range -14 to 42 bpm, p=0.01). There was also a change in O2 sat (mean change 0.42 +/- 1.36%, range -3 to 3%, p=0.03) after the application of lidocaine. When comparing each data point to the preceding point there was a statistically significant change in SBP when placing the scope in the nasopharynx (mean change 5.34 +/- 10.65 mmHg, range -22 to 26 mmHg, p=0.001) and in HR when placing the scope in the hypopharynx (mean change 3.76 +/- 6.41 bpm, range -9 to 19 bpm, p=0.0004).

There were 6 (12%) patients who were tachycardic at the time of their baseline data, 2 remained persistently tachycardic throughout the examination. When the scope was in the hypopharynx, 5 patients who were not initially tachycardic became so (although 3 baseline tachycardic patients dropped their heart rate). At the end of the procedure 10 (20%) patients had tachycardia that was greater than 10bp over their baseline. It is not clear from this study how increased familiarity with the procedure (i.e., how many times in the past the patient had undergone TNFE) would impact the physiologic response. It is also unclear if the underlying diagnosis, such as muscle tension dysphonia vs. carcinoma, may be correlated with a difference in physiologic response.

In 2010, our group looked at the changes in blood pressure, oxygenation, and pulse in 31 patient undergoing OBES. The changes in physiologic parameters were greater with OBES than TNFE. This may be related to the larger size of the endoscope, the longer length of the procedure or the increased invasiveness of OBES.

This study confirms that TNFE performed with a small caliber endoscope and topical anesthesia produces modest changes in HR and SBP during specific portions of the examination. While these changes do not appear to be clinically significant it is valuable for the examiner to understand the various stressful points of the procedure.

CONCLUSIONS

This study establishes normative data for TNFE on patients’ blood pressure, oxygenation, and pulse. There was no statistically significant change in blood pressure and pulse in the patients with application of nasal decongestion and anesthesia, as well as topical decongestion and anesthesia, on systolic blood pressure (SBP), diastolic (DBP), heart rate (HR), and oxygenation (O2 sat).

METHODS AND MATERIALS

This is a case control study in which the patients act as their own controls. Fifty adult patients undergoing TNFE were recruited at the UCSF Voice and Swallowing Center.

The patients first underwent a routine set of vital signs including temperature, SBP, DBP, HR, and O2 sat at the beginning of the visit (control data). They received, in one nostril, two sprays of a decongestant, topical 0.5% neosynephrine. Vital signs were recorded immediately thereafter. This was followed by 2 sprays of topical 4% lidocaine in the same nostril. Another set of vital signs were taken immediately after application of the lidocaine and at 5 minutes after instillation, when the lidocaine was at maximum effect. A 3.4mm flexible nasolaryngoscope was then inserted and BP, HR, and O2 sat were recorded when the tip of the endoscope was in the nasopharynx, hypopharynx and upon completion of the exam.

The changes in vital signs (DBP, SBP, HR, and O2 sat) from baseline and from the previous data point during the procedure were analyzed using the paired Wilcoxon signed-rank test.

While the mean changes in the measured parameters were modest, individual patients did exhibit large swings in pulse and severe hypertension. Unfortunately the data collection did not include co-morbid conditions to determine which patients were most likely to have tachycardia or severe hypertension during the examination. It did correlate with higher baseline data. Of the tachycardic patients, only 3 had tachycardia that was greater than 10bp over their baseline. It is not clear from this study how increased familiarity with the procedure (i.e., how many times in the past the patient had undergone TNFE) would impact the physiologic response. It is also unclear if the underlying diagnosis, such as muscle tension dysphonia vs. carcinoma, may be correlated with a difference in physiologic response.

REFERENCES