

# Dorsal Column Nuclei evoked activity recorded from the human Pedunculopontine Nucleus

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## OBJECTIVE

To verify whether the triphasic wave and the HFOs recorded from the PPTg do represent an evoked activity coming from DCN

## METHODS

We compared tibial nerve SEPs recorded from 2 patients:

1) one parkinsonian patient implanted in the PPTg for DBS,

2) one patient implanted with an epidural electrode at Cv2 level for pain relief

## RESULTS

The triphasic waveform and HFOs recorded from the PPTg after tibial nerve stimulation were very similar to the low- and high-frequency components recorded from the Cv2 epidural electrode, known to be generated in the DCN (Insola et al., 2010).

## CONCLUSIONS

The present results suggest that both the low-frequency triphasic waveform and the HFOs recorded from the PPTg are generated from the DCN, thus confirming our previous hypothesis (Insola et al., 2014, 2015)

## KEY POINTS:

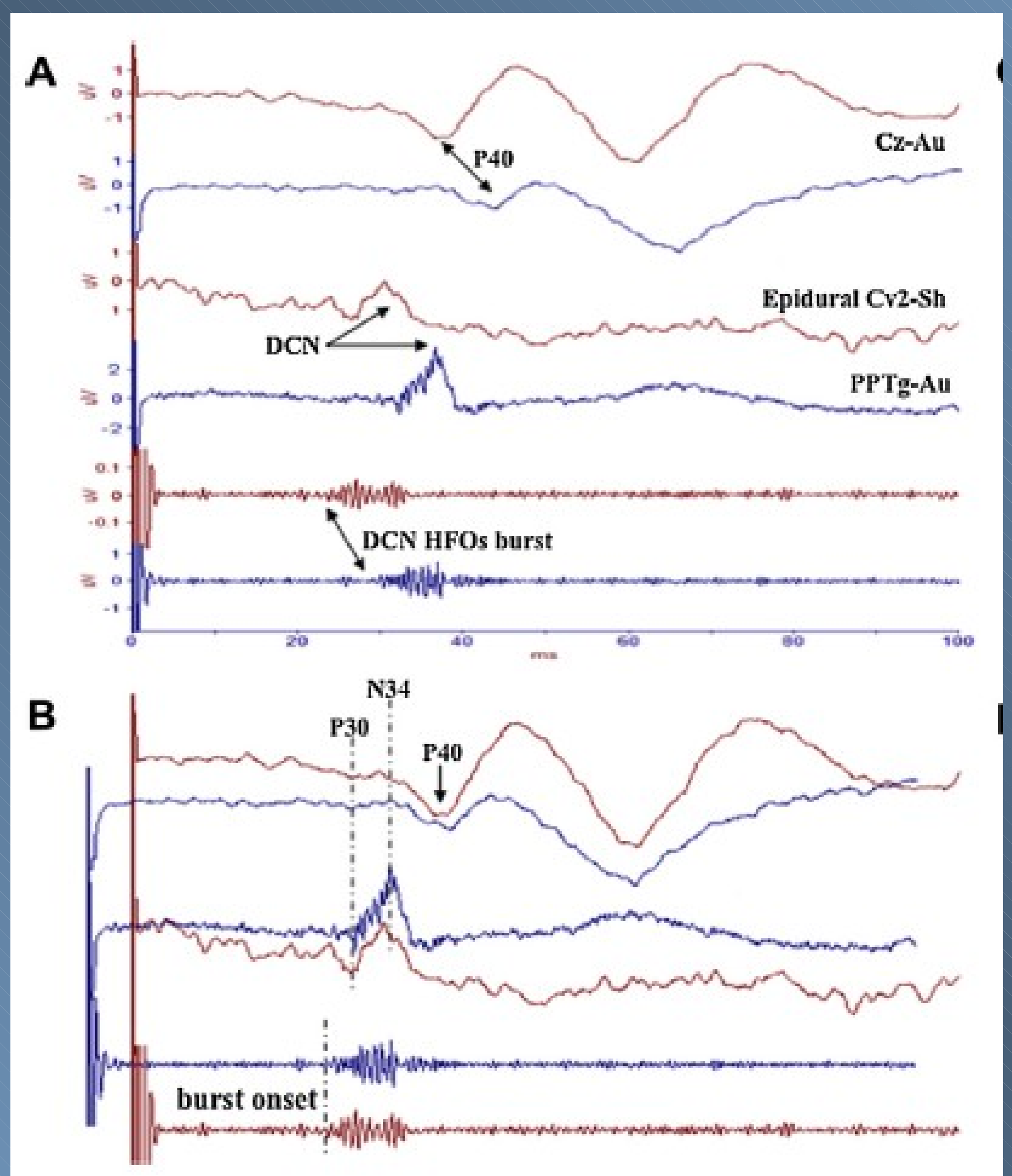
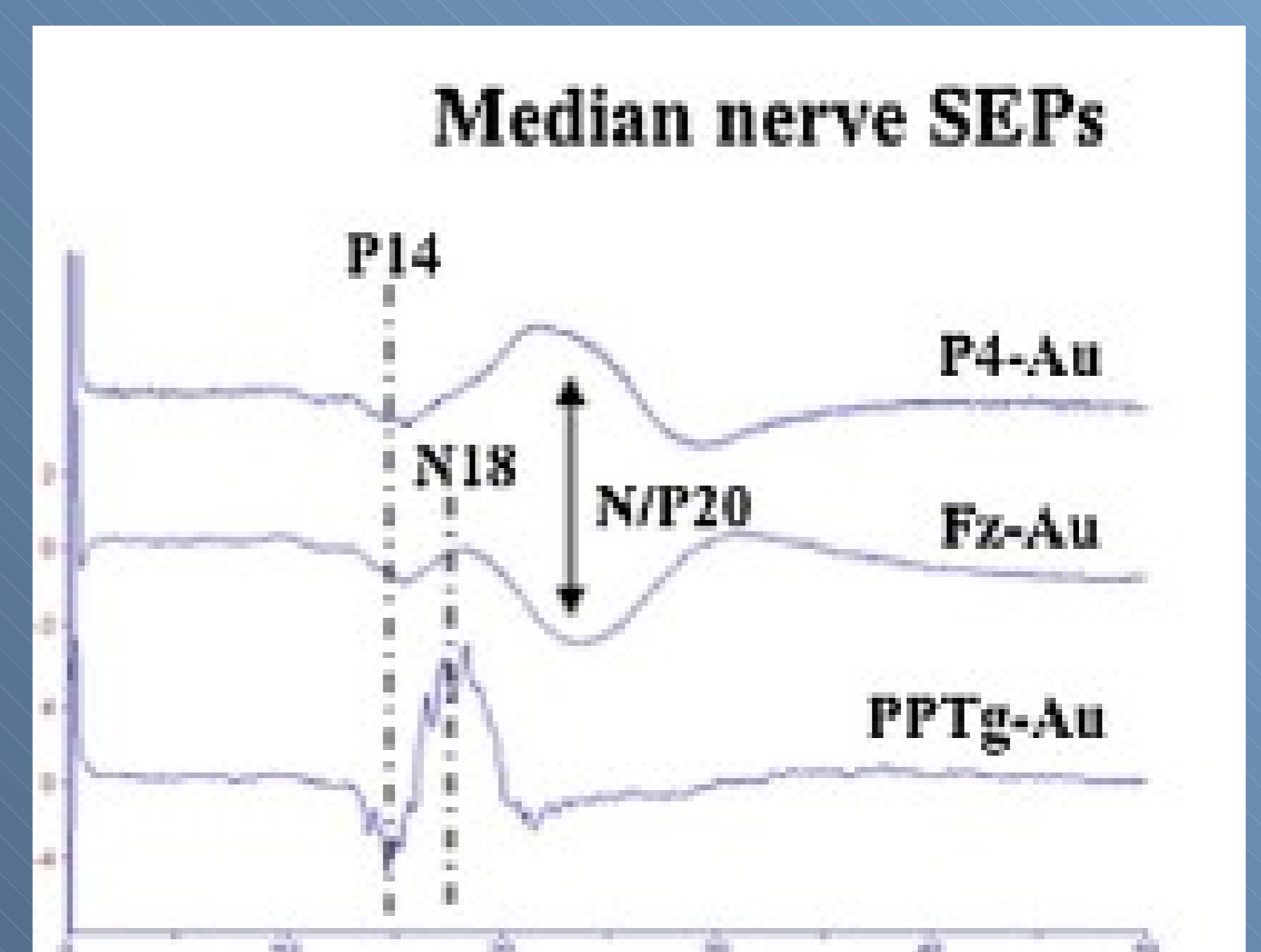
- A triphasic wave can be recorded from the PPTg electrode
- The PPTg potential is subtended by HFOs
- The PPTg SEPs are similar to those obtained from a cervical epidural electrode
- The PPTg electrode is able to capture biological activity coming from the DCN



Epidural electrode implanted at the upper cervical cord level

Intracerebral electrode implanted in the PPTg

Median nerve stimulation (wrist, 10 mA, 0.2 ms, 5.1 Hz)



A. The upper traces show the SEP recordings from the scalp (Cz electrode referred to the earlobe ipsilateral to the stimulation - Au), the middle traces show the recordings from either the PPTg (referred to the ipsilateral earlobe - Au) or the Cv2 epidural level (referred to the shoulder contralateral to the stimulation - Sh), and the lower traces show the HFOs obtained by filtering off-line (1000-2000 Hz) either the PPTg or the Cv2 traces. B. The traces obtained from both patients are superimposed after alignment at the scalp P40 latency.