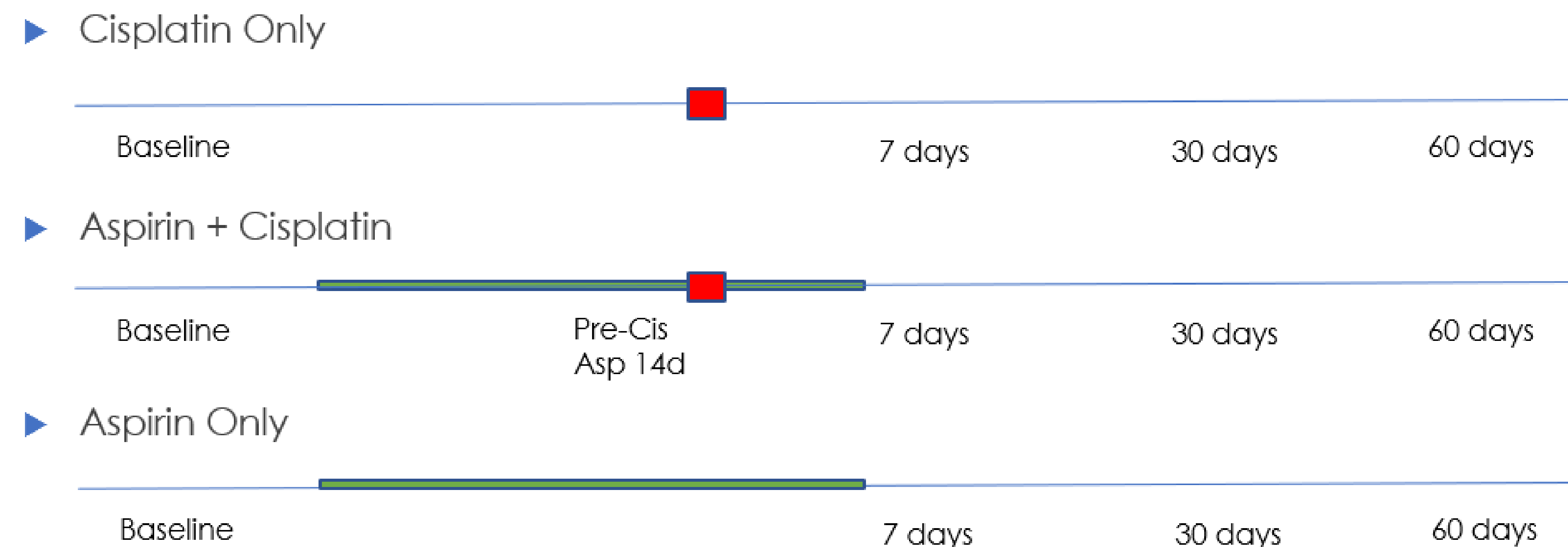


The protective effect of temporary hearing loss induced by aspirin on cisplatin-induced ototoxicity: a mouse model study

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Background: Cisplatin is a well-known chemotherapeutic drug within the head and neck region and has been associated with several toxic side effects including ototoxicity. Several chemoprotective antioxidant agents were proposed as protective agent. However, at present, there is no effective treatment to prevent cisplatin-induced ototoxicity. The purpose of our study was to evaluate the protective mechanisms of temporary hearing loss induced by aspirin, against cisplatin ototoxicity on mice. **Methods :** We randomly divided 20 8-weeks old male BALB mice into three groups: (1) cisplatin only (n=7), (2) aspirin only (n=7), and (3) combined aspirin/cisplatin (n=6). Temporary hearing loss protocol include intraperitoneal 200 mg/kg sodium salicylate (Sigma -St. Louis, MO), twice daily, for 14 days prior to cisplatin and 7 days after cisplatin administration. Cisplatin was administered as a single intraperitoneal injection of 14 mg/kg. Auditory Brainstem Response Recordings (ABR) thresholds for tone stimulus at 4,8, 16 and 32 kHz were measured before aspirin and cisplatin administration, and at 7 days 30 days and 60 days after cisplatin administration



Results: Aspirin-only induced temporary threshold shifts reached an average of 34.85 ± 22.34 dB at 4 kHz, 21.78 ± 24.49 dB at 8 kHz, 33.57 ± 25.07 dB at 16 kHz, 26.92 ± 17.26 dB at 32 kHz from baseline after two weeks, that reversed to 16.64 ± 18.37 at 4 kHz, 3.78 ± 11.08 at 8 kHz, 17.85 ± 19.58 at 16 kHz, 14.28 ± 21.47 at 32 kHz from baseline at 60 days. Comparison between 'cisplatin-only' and 'combined cisplatin/aspirin' groups demonstrated a significant otoprotective effect. Sixty days after cisplatin administration, cisplatin-only treated mice experienced an average threshold shifts of 50.7 ± 14.7 at 4 kHz, 35.1 ± 22.6 at 8 kHz, 70 ± 19.9 at 16 kHz, 53.1 ± 22.1 at 32 kHz, which were significantly worse than for cisplatin/aspirin treated mice that experienced an average threshold shift of 11.85 ± 10.89 at 4 kHz, 3.58 ± 8.1 at 8 kHz, 16.58 ± 16.57 at 16 kHz, 20.41 ± 16.84 at 32 kHz ($p < 0.01$). Comparison between aspirin-only and cisplatin/aspirin groups demonstrated no significant difference in thresholds between the groups after 60 days. **Conclusion:** In our preliminary results, we have shown that high doses of aspirin administered for three weeks were associated with a protective effect against cisplatin induced ototoxicity in an animal model. Moreover, we have shown, similar to previous studies, that aspirin only administration has temporary effect on hearing loss. We hope that our results will be advocated in a larger scale study.

60 days post treatment ABR in all frequencies -

