Laser ‘Gun’ Can Decrease IV Cannulation Pain

BY PATRICE WENDLING

ToroNTO — Pretreating the skin with a low-power erbium YAG laser significantly reduced the pain of intravenous cannulation in children in a double-blind randomized trial of 94 patients.

The researchers worked by removing a small area of the stratum corneum, which allows for rapid absorption of local anesthesia, convinistigator Dr. Deena Berkowitz explained. Laser pretreatment takes less than 10 seconds, followed by a 5-minute application of topical anesthesia before needle placement. This dramatically reduces the time of transdermal absorption, a limiting factor in the use of topical anesthetics before intravenous cannulation.


Dr. Berkowitz and coauthor Dr. Ira T. Cohen of Children’s National Medical Center, Washington, randomized 84 children who required intravenous cannulation to laser or sham laser with the Epytouch erbium:YAG laser prior to intravenous cannulation and 6% cream application and IV cannulation.

Pain was assessed on age-appropriate scales including the Wong-Baker FACES Pain Rating Scale and a 10-cm visual analog scale (a 10-point pain scale measured along a vertical or horizontal line). The patients ranged in age from 3 to 18 years, with an average age of 9 years in the laser group and 11 years in the control group.

The average pain of IV cannulation was significantly less for the 47 children treated with the laser than for children in the control group (2.94 cm vs. 5.36 cm). Dr. Berkowitz reported at the annual meeting of the Pediatric Acade-

The median pain of laser application was 0 in both groups. Satisfaction surveys indicated that significantly more parents of patients enrolled in the laser group reported that their children had less pain after IV cannulation after laser treatment than in the control group (72% vs. 38%).

An audience member questioned whether patients or their parents may have anticipated less pain because of the use of an additional treatment prior to cannulation. “These were children who had had IV’s before, but we did see some placebo effect in patients and parents,” said Dr. Berkowitz. Audience member Dr. Lei Chen of Yale–New Haven (Conn.) Children’s Hospital, said he and his colleagues tested the device, some patients were troubled by the laser’s gun-like appearance and the release of a small puff of smoke.

Wrapping the device in colorful covers could have alleviated potential anxiety, but hasn’t entirely stopped young boys from wanting to pick up the laser and shoot it, although that’s not possible without a key, Dr. Berkowitz said. Only one pa-

Patient Informed Consent

Dr. Berkowitz, who said the study lasers were supplied by a manufacturer whose name cannot be released because it signed a confidentiality agreement, said when he and his colleagues tested the device, some patients were troubled by the laser’s gun-like appearance and the release of a small puff of smoke.

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 Colorful coverings can reduce the gunlike laser device’s ability to induce either anxiety or playfulness in children.