EVALUATION OF PRECAUTIONS ADOPTED BY DENTAL SURGEON USING LOCAL ANAESTHESIA

A.E. OBIECHINA*, C. OJI**

INTRODUCTION

Most surgical procedures in dental and oral surgery are performed under local anaesthesia. It is hard to conceive the progress of dental surgery without local anaesthesia. The use of lignocaine as local anaesthetic is very common, because it is generally regarded as safe (1, 2). Though relatively rare, there have been reports of complications associated with the use of local anaesthesia, and these include intravenous injection, drug overdose, herpetic and HIV infection, some of which are fatal. Some precautions are essential to avoid or reduce complications associated with the use and administration of lignocaine as local anaesthetic. The precautionary measures include the type of syringe used and the method of replacing the needle guard after injection. Therefore, the aim of this study is to determine the level of application of the precautionary measures and the knowledge of the dosage of lignocaine by dental and oral surgeons.

MATERIALS AND METHODS

A questionnaire was completed by dental and oral surgeons. Equal numbers of surgeons were selected randomly from teaching hospitals and state-government owned and private clinics. Information requested includes use of gloves and facemasks, rank and type of practice, maximum dosage of 2% lignocaine with adrenaline 1:80000 in mg/kg body weight and maximum number of 1.8 ml cartridges, the type of syringe used, and how the needle guard is replaced after giving injection. The questionnaires were completed immediately and retrieved. Data was analysed using simple proportions.

RESULTS

There were 62 surgeons consisting of 58 dental surgeons and 6 oral surgeons. Thirty-eight were (61.3%) males and 24 (38.7%) were females. Of this number, 31 (50%) were from private and state government owned clinics while the rest were from teaching hospital. Thirty-three (53.2%) consists of dental house surgeons (41.9%), senior dental house surgeons and dental officers (11.3%), while 29 (46.8%) were within the rank of registrars and senior dental officers (11.3%), senior registrars and principal dental officers (17.7%) and consultants (17.7%). Six (9.7%) use aspirating syringe all the time, 11 (17.7%) use aspirating syringe occasionally and 45 (72.6%) use non-aspirating syringe. Among the users of non-aspirating syringe, 36 (58.1%) indicated that aspirating syringe was not available in their clinics. Fifty-three (85.5%) are aware of the advantage of aspirating syringe over non-aspirating type. All the surgeons wear face-masks and latex gloves.

On the replacement of the needle guard after injection 58 (93.5%) indicated that the needle is first inserted into the needle guard and then secured, while 4 (6.5%) pick up the guard with their fingers, place it over the needle and secure the guard.

Eight (12.9%) indicated that the maximum dose of 2% lignocaine with adrenaline 1:80000 is 7 mg/kg body weight or less, 5 (8.1%) indicated 10 mg/kg body weight, while 49 (79.0%) did not complete this section. On the maximum number of 1.8 ml cartridges, all the surgeons indicated that the maximum is 12 or fewer cartridges.

DISCUSSION

The immediate complications of local anaesthetic injection include positive blood aspiration, intra-vascular injection, blanching, burning sensation on impingement of a nerve, and syncope. LUSTIG and ZUSMAN (3) observed 2.95% positive aspirations, 2.5% burning sensation due to nerve impingement and syncope in one out of 2580 injections. Positive blood aspirations and burning sensation are the common complications, most of which occur during nerve block injections. This is understandable because of the presence of the neuro and vascular bundles in intimate relationship. Positive blood aspirations do not usually present with further complications if the needle is repositioned appropriately and intra-
vascular injection avoided (7).
Intra-vascular injection and rapid absorption of local anaesthetics are among the causes of syncope. Because of the close relationship between the neuro, and vascular bundles, burning sensation from impingement of the needle on the nerve, and syncope can be reduced through the use of aspirating needle. However, this study revealed that 72.6 % of the surgeons use non-aspirating syringe, suggesting that there is a high risk of intra-vascular injection. That 85.5 % are aware of the advantages of the use of aspirating syringe reflects a high degree of awareness among practitioners. With 41.9 % of the surgeons not having aspirating syringe in their clinics, the number of surgeons using aspirating syringe is not a true representation of the willingness of surgeons to adopt the use of aspirating syringe as a precautionary measure. The incidence of HIV infection in the African sub-continent is on the increase (8). OLUBUYIDE et al. reported a high incidence of Herpetitis B virus among dental surgeons (9). In a survey of resident doctors in Nigeria, needle puncture was reported to be frequent among dental surgeons (9). The hazard of having a needle prick in an attempt to use the fingers to replace the needle-guard, could be grave. Although majority of the surgeons (93.5 %) adopt preventive measures the consequence of needle injury could be fatal. Therefore, it is imperative that there should be total compliance. The maximum dose of 2 % lignocaine with adrenaline 1:80000 is 500 mg in 25ml, each ml containing 20 mg of lignocaine and 12.5 micrograms of adrenaline (11). The maximum number of 1,8 ml cartridges is 13 and the maximum dose in a healthy adult is 7 mg/kg body weight. All the surgeons were within the maximum number of local anaesthetic cartridges that can be administered to a healthy adult. The same cannot be said of the maximum dose in mg/kg body weight. Similar finding has been reported (12). Our finding be ascribed to the fact that local anaesthetic cartridges are readily available, more convenient and extensively used by dental surgeons, It may also be an indication that emphasis on the dose in mg/kg body weight during undergraduate training is inadequate, considering the fact that 26 (41.9 %) were dental house surgeons. However, it further confirms the advantage of the cartridge system in the administration of local anaesthetic injection (12). All the six oral surgeons in this study were able to state the maximum dose in mg/kg body weight. This may not be unrelated to the fact that oral surgeons have more occasions to use local anaesthetics that are not contained in cartridges. This study revealed that the risk of intravascular injection is high. Although the most dental surgeons take necessary precautions to avoid complications arising from the use of local anaesthetics, there is a need for total compliance in view of fatal complications that may ensue. It also underscores the need for continuous dental education program to update practitioners.

ABSTRACT

There were 62 surgeons consisting of 38 (61.3 %) males and 24 (38.7 %) were females. Thirty-one (50 %) were from private and state government owned clinics while the rest were from teaching hospitals. Thirty-three (53.2 %) were dental house surgeons, senior dental house surgeons and dental officers, while 29 (46.8 %) were within the rank of registrar and senior dental officer, senior registrar, principal dental officer and consultant. Six (9.7 %) use aspirating syringe all the time. 11 (17.7 %) use aspirating syringe occasionally and 45 (72.6 %) use non aspirating syringe. All the surgeons wear facemasks and latex gloves. On the replacement of the needle guard after injection, 58 (93.5 %) indicated that the needle is first inserted into the needle guard and then secure4 while 4 (6.5 %) pick-up the guard with their fingers, place it over the needle and secure the guard. Eight (12.9 %) indicated that the maximum dose of 2% lignocaine with adrenaline 1:80000 is 7 mg/kg body weight or less, 5 (8.1 %) indicated 10 mg/kg body weight, while 49 (79.0 %) did not complete this section. On the maximum number of 1,8 ml cartridges, all the surgeons indicated that the maximum is 12 or fewer cartridges. This study revealed that the risk of intravascular injection is high. Although of the most dental surgeons take necessary precautions to avoid complications arising from the use of local anaesthetics, there is a need for total compliance in view of fatal complications that may ensue. It also underscores the need for continuous dental education program to update practitioners.

Keywords: Local anaesthesia, Precautions.
Évaluation des précautions adoptées par les chirurgiens-dentistes utilisant l’anesthésie locale

Il y avait 62 chirurgiens constitués de 38 (61,3%) hommes et 24 (38,7%) femmes. Trente et un (50 %) venant des cliniques privées et des cliniques d’État du gouvernement alors que le reste était de l’école hospitalière. Trente trois (53,2%) étaient des chirurgiens dentistes internes, des chirurgiens dentistes internes supérieurs et des agents dentistes, tandis que 29 (46,8%) appartaient au rang du censeur et des agents dentistes supérieurs, des censeurs supérieurs, des agents dentistes principaux et des médecins consultants. Six (9,7 %) utilisent à tout moment le seringue aspiratoire, 11 (17,7 %) utilisent occasionnellement le seringue aspiratoire et 45 (72,6 %) utilisent le seringue non aspiratoire. Tous les chirurgiens portent un masque au visage et des gants en latex.

En remplaçant les porte-aiguilles après l’injection, 58 (93,5 %) ont indiqué que l’aiguille est d’abord insérée dans le porte-aiguille qui est ensuite fermé, alors que 4 (6,5 %) prennent le porte-aiguille avec leurs doigts, le place sur l’aiguille et le ferme. Huit (12,9 %) ont indiqué que la dose maximum de 2 % de lignocaine avecadrénaline 1 : 80000 est 7mg / kg ou moins, 5 (8,1 %) ont indiqué 10 mg/kg alors que 49 (79,0 %) n’ont pas complété cette section. Sur le nombre maximum d’1,8 ml de cartouches, tous les chirurgiens ont indiqué qu’il y avait au maximum 12 cartouches ou moins. Cette étude a révélé qu’il y a un degré élevé du risque d’injection intravasculaire. Bien que la plupart des chirurgiens dentistes prennent des précautions nécessaires pour éviter les complications provenant de l’usage de l’anesthésie locale, il y a besoin de prévoir un acquiescement total des complications fatales qui pourraient surgir. On aura aussi besoin d’une éducation dentaire continue dans le but de recycler les médecins.

REFERENCES

1 - DAUBLANDER M, MULLER R, LIPP MD. 1997

2 - MEYER FU. 1999

3 - LUSTIG JP, ZUSMAN SP. 1999

4 - CHEN AU 1998

5 - WORTHINGTON LM, FLYNN JP, STRUNIN L. 1998

6 - HAAS DA. 1998

7 - MEECHAN J. 1998

8 - GRIMES RM, GRIMES DE. 2000

9 - OLUBUYIDE JO, OLA SO, ALIYU B, DOSURNU 00, AROTIBA JT, OLALEYE OA, ODAIBO GN, ODEMUYIWA SO, OLAWUYI F. 1997

10 - HOWE GL, WHITEHEAD FM. 1981

11 - HOWE GL, WHITEHEAD FM. 1981 Pg 71.

12 - ROWSON JE, PRESHAW PM. 1997