In addition, easy-break ampoules and, in cases of high use, multi-dose bottles are used. Multi-dose dispensing bottles must, however, contain preservatives, which represents an allergy risk. For persons with allergies, therefore, the use of easy-break or cylinder ampoules is preferred because these usually do not contain preservatives.

Injection should be done slowly (circa 1 ml/30 sec.). In the case of intraligamentary anesthesia, an even slower injection is required. Here, special injection syringes are available that make uniform and reduced pressure injection possible. Recently, electronically controlled injection systems (Anaeject, Wand), have become available.

Today, thin disposable needles with a precision bevel, such as the triple lancet bevel (Sep-toject, Septodont), are used as injection needles. Other developments for reducing injection pain are injection needles with a silicon coating for improved sliding characteristics and cannulas with a thinner wall thickness for reducing the injection pressure required and a slowing of the flow of the injection solution (Seproject XL, Septodont).

Complications

Most frequently, adverse non-specific systemic effects occur that are caused by the injection itself. In extremely rare cases they require specific treatment and are only transient in nature. Drug-dependent adverse effects such as intoxication or anaphylactic shock are potentially life-threatening.

Intoxication can be triggered by overdosage of the local anesthetic or by vascular injection. The symptoms of intoxication are of the CNS type. Dizziness, tremors, facial twitching, seizures, decrease in pulse and blood pressure, and a respiratory or cardiovascular arrest can also occur.

The first symptoms in anaphylactic shock include reddening and swelling of the injection site followed by pruritis. A generalized release of histamine can cause cardiovascular shock symptoms like an increase in heart rate and a drop in blood pressure. Finally, the result of this can be cardiovascular arrest.

Intoxication and anaphylactic shock require immediate action by the dental team and operational emergency equipment. An essential component of emergency prophylaxis is a careful and regularly updated medical history.

Fig. 1: Cylinder ampoule production for 260 million ampoules/year (Septodont).—Fig. 2: Quality control.—Fig. 3: Mepivacaine cylinder ampoules.—Fig. 4: Articaine cylinder ampoules.

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