

The Value of Digital Subtraction Sialography in the Diagnosis of Diseases of the Salivary Glands

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Summary

The study included patients in whom digital subtraction sialography was performed in the diagnosis of sialolithiasis, chronic and chronic-recurrent inflammations, and other pathological conditions of the salivary glands.

A group of 42 patients was examined, consisting of 6 women and 36 men with signs of chronic inflammatory processes, suspected sialolithiasis, dislocation of the duct and Sjögren's syndrome.

The method of digital subtraction sialography provides excellent presentation of the secretory canal of the salivary gland and small intraductal canals up to the glandular parenchyma. The method enables excellent vision of alterations within the parenchyma, changes which have an effect on the lumen and position of the canal, and eventual changes which are conditioned by external factors. The smallest canal structures are also shown by this method. Thus, the possibility of an erroneous finding, which frequently occurs with other diagnostic methods, is significantly reduced.

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Introduction

Digital subtraction sialography is a diagnostic radiological method for showing the secretory canals of the salivary glands, their intraparenchymal branches, intraductal alterations, sialectasia, sialolithiasis, ductal structures, small abscess cavities and traumatic lacerations (1).

The technique of digital subtraction sialography is a method of retrograde application of a contrast

substance after cannulation of the duct and introduction of a catheter or sialographic cannula (2, 3).

The possibility of undesired consequences and complications with this diagnostic method is relatively slight. Ductal trauma may occur as a result of careless manipulation or severe pain during cannulation or during application of larger amounts of the contrast substance. Exacerbation of the chronic inflammatory process may occur after the examination. Extremely rarely allergic reaction to the

applied contrast substance may also occur (4, 5).

Contraindications for application of this method are acute inflammation of the gland, exacerbation of chronic inflammation and determined sensitivity to the application of the contrast substance.

Material and methods

During the period from 1996 to 2001 forty-two patients were examined by the method of digital subtraction sialography, in whom disease of the salivary glands was clinically diagnosed, of chronic or chronic-recurring course, and suspected lithiasis. The study included 6 women and 36 men, aged from 18 to 67 years.

The frequency of the examination of the left and right salivary gland was the same. In 7 patients the examination was performed bilaterally, and the interval between the examinations was one day. Thus, a total of 49 sialographs were performed.

All the examinations were carried out on a Philips DVI-CV apparatus (Philips Medical System - Eindhoven, Netherlands). An electronic image amplifier was used of 6 and 10 inches. Prior to the digital subtraction sialography conventional X-rays were taken of the area of the gland and secretory canals in a lateral angled projection, for possible presentation of an inorganic sialolith.

For the examination an anaesthetic in the form of a spray was used, a dilator-Bowen's probe, sialographic cannula or catheter, connector, syringe and neionic contrast substance.

Iohexsol (Omnipaque 240) was used in the diagnosis. The examination was performed with the patient lying on the table for X-ray recordings, and the recordings carried out in a lateral projection.

After anaesthesia of the mucous membrane and dilatation of the opening, a cannula or catheter was inserted and the contrast substance applied by hand and the recording performed. The contrast flow was followed on the monitor up to the parenchymal phase. In this way all the structures of the duct were presented. The recording was carried out during the

application of contrast at a speed of 1.9 images per second, for a period of 10 seconds.

Results

Following the diagnostic procedure and digital analysis of the images 12 patients, (25%), had a normal finding out of the total number of 49 examined glands. Three patients (6%) had stricture of the secretory canal, and four patients (8%) stenosis with sialodochitis. Nine patients (18%) had marked multiple stenosis of the small intraglandular branches (Figure 1). One patient (2%) had marked sialodentitis, without lithiasis (Figure 2). Multiple stenoses of the duct, with sialodochitis and multiple stenoses of the small intraglandular branches with atrophy of the gland parenchyma were found in 16 patients (33%). Sialolithiasis was found in two patients (4%). In 4% of patients the sialograph indicated Sjögren's syndrome (Figure 3).

Discussion and conclusion

Digital subtraction sialography is an indispensable method in the diagnosis of alterations of the parotid and submandibular gland, particularly in the diagnosis of alterations in the secretory canals of the salivary glands. Sialography is also one of the diagnostic methods for confirmation of Sjögren's syndrome. The examination is of higher quality, with better results in the diagnosis of pathological changes in the parenchymal part of the gland, compared to CT, MR or ultrasound diagnostics (6-9).

In the case of lithiasis and chronic inflammations with stenoses and dilatations, it shows great accuracy in the diagnosis of such changes.

The examination greatly reduces the time needed for diagnosis, exposure to radiation is reduced and good presentation of the pathological changes is achieved, particularly of the duct status.

Digital subtraction sialography is an important nonvascular application of digital imaging technology.