Reviews / Analyses

Serological diagnosis of HIV infection using oral fluid samples

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The serological identification of antibodies to human immunodeficiency virus (HIV) in blood is the most widely used method to diagnose HIV infection. Recently, however, the use of oral fluid samples for the detection of antibodies to HIV has been suggested as an alternative. This review describes some basic information about oral fluids, the application of these samples for HIV testing, and summarizes results from many of the studies performed using HIV tests with oral fluids. The fluids obtained from the oral cavity include saliva and crevicular fluid, and can be collected directly (by dribbling) or by using commercially available devices. The immunoglobulin content of oral fluids is similar to that of blood, but their levels are less. However, the use of an HIV IgG antibody capture assay (GAC ELISA) designed specifically for testing oral fluids, and certain routine HIV blood tests that have been optimized for use with oral fluids, has produced encouraging results. A number of studies, including several in developing countries, report that the sensitivities and specificities of these optimized tests lie in the range 95–100% and 98–100%, respectively. Also, the performance of the GAC ELISA was consistent and in general, excellent. The article identifies several issues that need to be addressed before a recommendation on the routine use of oral fluid samples for HIV antibody detection can be made.

Introduction

Serological testing using blood samples is the most widely used method for the diagnosis of human immunodeficiency virus (HIV) infection, and has been employed routinely since 1985 (1). Currently, the screening of serum by enzyme-linked immuno-sorbent assay (ELISA) and confirmation by Western blot is a common testing strategy, but WHO has recently suggested that alternative testing algorithms which reduce the need for the Western blot can be used successfully to screen blood for transfusion safety, and for surveillance and diagnostic purposes (2). These alternative strategies are simpler and less expensive to perform and can provide more objective results (3).

Recently the use of oral fluids such as saliva for detecting antibodies to HIV has been suggested as an alternative to the use of blood (4–7). This is based on the previous demonstration of specific immunoglobulin in oral fluids. Both IgA and IgG are present in oral fluids, with IgA being derived primarily from the salivary glands, while IgG reaches the oral cavity mostly through the transudation of serum components from the capillaries beneath the buccal mucosa (8); however, the levels of IgG are much less than those in serum, which has raised some concern about whether IgG can be adequately detected in oral fluids. Although the results of a number of studies suggest that the use of oral fluids may be appropriate for several testing situations, there remain a number of issues that must be addressed before their use can be recommended for HIV antibody testing (9).

Oral fluid samples can be used successfully to detect antibodies to a variety of viral agents including hepatitis A virus, hepatitis B virus, rubella virus (10–12), and hepatitis C virus (13). Hepatitis B surface antigen (14) and HIV antigen (15) have also

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been detected in oral fluids. Furthermore, oral fluid samples have been used to detect the presence of a variety of substances including hormones, therapeutic drugs, cocaine, caffeine, and tumour markers.

Testing for antibodies to HIV using oral fluids was introduced in the mid-1980s (10, 16–19). Since then, the performance of a variety of HIV serological assays, using several types of oral fluids, has been reported (Table 1). The results are encouraging, and several reports suggest that oral fluid samples can be used successfully as an alternative to serum samples for HIV testing. However, test performances vary depending on the tests used and the methods of collecting oral fluids (20, 21). Several oral fluid collection devices have been developed, and one assay has been designed specifically for testing these types of fluids (22).

Currently, there is considerable interest in the use of oral fluids for HIV antibody testing, and many individuals are seeking advice about the accuracy and advantages of such testing (9). This review describes some basic information about oral fluids, their application as samples for HIV testing, and summarizes current understanding concerning the performance of HIV tests when used with oral fluids.

**Oral fluid testing**

**Advantages**

The use of oral fluids for HIV testing offers several advantages over that of blood. Most importantly, sample collection is safer since occupational risk from needle-sticks, disposal of needles, and cuts from broken glass tubes are eliminated. In addition, the load of infectious virus in saliva is lower than that in blood (23–25). Disposal of wastes is an important consideration in countries where incineration or autoclaving facilities are not available and where waste materials are buried or placed in open refuse areas. With oral fluids the disposal risk is minimized since a single collection device, usually made from an absorbent material, can be discarded with greater safety than a blood collection tube and needle. The collection of oral fluids may be simpler than that of venous blood, particularly from children, obese individuals, and from persons whose veins are not easily accessible. In some instances, adequate amounts of blood are difficult to obtain because of cultural/religious reasons and/or collapsed veins, and several reports indicate that collection compliance is

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* EIA = enzyme immunoassay; PAT = particle agglutination assay; WB = Western blot; GAC ELISA = IgG antibody capture enzyme-linked immunosorbent assay.

<sup>b</sup> Sample size, positive/negative.

<sup>c</sup> Not done.
greater for oral samples than for blood. In addition, the use of oral fluids could help to reduce infection through the re-use of unsterilized needles. There may also be a cost saving when oral fluids are used as samples because collection requires minimal training of personnel. Furthermore, samples can be collected simultaneously from groups, while self-collection offers additional cost and time savings if large numbers of samples are to be collected. The cost of materials is less when whole saliva (dribble) is used, but is comparable (about US$ 0.50–1.50 per person, depending on the number of devices purchased) to the cost of blood-drawing materials if an oral collection device is required. Although blood collected by finger-, heel-, or ear-lobe-prick may be the least costly of all methods, it may also be the most painful (26) and involves disposal hazards.

Disadvantages

There are a few potential disadvantages related to the use of oral fluids for HIV testing. Firstly, it may be difficult to conduct unlinked anonymous studies for sentinel surveillance, which require that blood collected for a different purpose be used for HIV testing; currently, oral fluids are not collected for other testing purposes. However, this could change in the future since oral fluids are now being used to measure antibodies to other infectious agents such as measles and hepatitis viruses (12). Secondly, there is the potential for degradation of proteins, including immunoglobulins, by proteolytic activity if whole saliva is used without the addition of stabilizers. Thirdly, there is concern that some oral fluid samples may not possess sufficient quantities of immunoglobulin (total), and therefore may not be adequate to test for specific antibodies; however, this has been challenged owing to the development of sensitive assays (27) and novel collection devices. Fourthly, large volumes of saliva for quality control panels will be much more difficult to obtain than blood, and oral-fluid conversion panels may be required for certain licensing agencies. Finally, the use of oral samples may raise concern about transmission of certain infectious agents, such as Mycobacterium tuberculosis, and ethical/legal concern about the use (abuse) of easily collected samples for unsupervised HIV testing, e.g., home testing.

Components of oral fluid

Saliva

The term saliva has been used loosely to describe fluids obtained from the oral cavity. Several types of fluids can be collected individually from the oral cavity (salivary glands or the area at the tooth–gum margin), but most commonly a mixture of different fluids is collected. The term pure saliva describes the fluid specifically derived from the submandibular, parotid, sublingual, and labial salivary glands, and must be collected by special methods. Pure saliva is composed mainly of a small number of immune and epithelial cells, small amounts of immunoglobulin (primarily of the secretory IgA isotype), and digestive enzymes such as amylase, zymogen granules, and proteases. Some of these enzymes, and perhaps more importantly, enzymes from bacteria that are normal flora, may degrade salivary proteins such as immunoglobulins, particularly if a secretory component of the immunoglobulin is not present.

The term whole saliva is proposed for oral fluids collected directly (by dribbling or spitting). Whole saliva contains salivary gland secretions (pure saliva), products of the oral mucosa, and gingival crevicular fluid—a fluid derived from the capillaries at the gingiva–tooth margin (8). In this review the term oral fluid is used for fluids obtained from the oral cavity, without indication of their specific origin.

Crevicular fluid

The terms crevicular fluid (CF), oral mucosal transudate (OMT), gingival crevicular fluid, crevicular fluid saliva (CFS), and gingival crevicular transudate (7, 27) have all been used to describe those oral fluids that are derived as an interstitial transudate, since immunoglobulin (mainly IgG) and other plasma components are passively transported from the capillary bed beneath the buccal and gingival mucosa to the oral cavity. The recent observation that the levels of albumin and immunoglobulin in serum and oral fluid do not correlate directly (15) suggests that a mechanism other than transudation could be responsible for the regulation of antibody levels in oral fluid. The composition of CF (similar to that of plasma but in quantities less than in serum) is most probably also altered due to the dilutional effect of saliva. CF is most easily obtained from the tooth–gum margin (gingival crevices and/or buccal mucosa) by collection with a special device or swab.

Mixtures

Regardless of the method used to collect oral fluids, saliva and CF will be collected together. The site of

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placment of collection devices in the mouth differs, however, and therefore different devices may preferentially collect primarily one or the other fluid. As indicated below, one device is placed under the tongue, while another is placed along the tooth margin; a third device is chewed. Since IgG can be detected in fluids collected by all of these devices and in whole saliva collected by dribbling, each probably contains a mixture of saliva and CF. Individuals show variable levels of salivation when an object is placed in the mouth, and an increased production of saliva can act to dilute CF. Several investigators have suggested that the IgG concentration of oral fluids should be determined in order to assess the adequacy of sample collection, since the IgG concentration of some samples may be <0.1 mg/l, below the detection capabilities of some assays (J. Parry, personal communication, 1993). However, the reported high sensitivities of some tests that use oral samples suggest that this may not be a significant problem (22, 28, 29).

**Immunoglobulin in oral fluid**

The salivary glands have a local immunological system, including the production of secretory IgA, which constitutes about 87% of the immunoglobulins in pure saliva. IgG is found in fluid from salivary glands but at a much lower concentration (approximately 1/800th) than in serum (30). HIV-specific IgA in saliva has been reported to be a potential marker for HIV infection in infancy (31) and may correlate with disease stage (32). However, it is unclear whether the specific anti-HIV IgA detected in saliva is secretory IgA or serum IgA from CF. It follows that if specific secretory antibodies are to be detected in whole saliva, conjugates must be employed that can identify IgA. However, the predominant immunoglobulin in whole saliva and CF is IgG, and current tests incorporate anti-IgG conjugates.

Whole saliva receives variable amounts of IgG from the transudation of capillary fluid. IgG levels appear to be independent of flow rate and probably originate from local plasma cells and CF; thus, CF appears to be the main source of salivary IgG (8). However, the IgG concentration of CF is approximately four-times less than in blood (3500 mg/l compared with 14 730 mg/l in plasma (30, 33)). The IgG concentrations in the various oral fluids are listed in Table 2. Preliminary data indicate that IgG levels do not decline and HIV antibody titres and Western blot intensities remain consistent when up to five sequential oral fluid samples are collected using a device (C. Majors, personal communication, 1993). The stability of IgG in the presence of other oral fluid constituents (i.e., enzymes) is most probably due to the chemical stabilizers in the transport medium included with the collection devices. Efforts should be made to avoid the collection of sputum when attempting to collect saliva (34).

**Saliva collection methods**

**Direct collection**

Whole saliva is most easily collected by dribbling (drooling, spitting) into a container (direct collection); no collection device is required. Sometimes whole saliva is collected in conjunction with the use of substances that stimulate salivary glands to produce fluid. Methods to induce (stimulate) salivation, e.g., candies or citric acid, have been used but do not appear necessary since accurate antibody detection has been reported without the use of inducers (22, 28, 35). Following collection, whole saliva is sometimes diluted in ELISA buffer and/or a non-ionic detergent such as Triton X-100 added prior to testing (21, 34). However, good results can be obtained by testing untreated, uncentrifuged whole saliva (6, 24, 36, 37), and prior centrifugation does not increase the sensitivity of oral fluid tests (36). Several studies have shown that test performance with fluids collected by these direct methods is 100% (22, 28, 29).

**Collection devices**

Oral fluid collection devices have been developed by at least three companies. Some devices consist of an absorbent pad on a plastic stem. These devices are packaged separately and include a buffer (transport medium) containing antimicrobial agents and proteolytic stabilizers. Following collection, the pad is transferred to the buffer, and the fluid/pad transported to the laboratory where the fluid is used for testing. Alternatively, a collection device may consist of an absorbent pad (roll) that is chewed to collect the fluid, with the fluid subsequently being eluted during centrifugation. Regardless of the specific collection device used, the collected oral fluids are stable at room temperature for at least 3 weeks and remain so for longer periods when refrigerated or frozen. It is imperative that the collection of oral fluids be performed exactly as recommended by the manufacturers of the devices.

One collection device (Omni-sal, Saliva Diagnostics Systems, Vancouver, WA, USA) is placed under the tongue for two minutes and collects whole saliva. The device has been modified recently to include an indicator that verifies the quantity of fluid collected. The saturated pad is placed in a buffer solution, the stem removed from the pad, and the vial containing the pad transported to the laboratory.
at room temperature. Subsequently, the fluid content of the pad is expelled by centrifugation, or more easily by using a serum separator. The supernatant, which represents a 1:2 dilution, is then used directly for testing.

A similar device (OraSure, Epitope, Inc., Beaverton, OR, USA) is placed in the mouth along the tooth–gum margin for two minutes. The pad is specially treated to absorb immunoglobulins, which are efficiently eluted during centrifugation. This procedure essentially concentrates antibody, thereby addressing the problem of low antibody levels. Recently, a modified procedure has been developed where centrifugation is circumvented by using a disposable syringe plunger to expel the eluate by forcing the fluid collected through a port at the bottom of the transport tube. The collected fluid has enhanced levels of CF (referred to as OMT by the manufacturer), approximately 50-fold lower than pure OMT, but fourfold higher than those in whole saliva, according to the manufacturer.

Another type of collection device (Salivette, Sarstedt, Leicester, England) consists of a cotton-wool roll which subjects masticate for one minute; subsequently it is centrifuged and diluted in ELISA buffer before testing (21). This device is chewed along the tooth–gum margin and therefore collects a mixture of saliva and CF (27). Other absorbent devices that are used like toothbrushes have also been described (J. Parry, personal communication, 1993) but little information is available.

Uses of oral fluid for HIV testing

Several studies have suggested that the use of oral fluids for HIV testing as an alternative to serum would be advantageous for surveillance owing to the high specificity obtained (5, 38). There is little doubt that the collection of oral fluids would be much easier, and there is evidence to support better collection compliance when oral fluids are requested for surveillance purposes (see below). However, the use of oral fluids for diagnostic purposes should only be recommended after it has been established unequivocally that test performance is equal to or better than that using serum or dried blood spots. For example, a sensitivity of 98.5% may be acceptable for epidemiological studies, but unacceptable if used for clinical diagnosis. If collection devices can be modified for use with newborns or small infants, oral fluids would be the samples of choice because of the difficulty in obtaining blood from them.

Even in 1990, saliva samples were being used to detect antibody responses to individuals receiving a recombinant gp160 HIV vaccine candidate (39). Antibodies in saliva were absent in all individuals tested using an ELISA, while antibodies to envelope antigens were detected in one of three individuals who were receiving low-dose vaccine and in two of two receiving high doses when tested using a Western blot. In another study (40), envelope-specific antibodies were detected in oral fluid from all individuals vaccinated with a recombinant HIV-1 gp160 vaccine candidate. The reactive antibodies were of the IgG class and were detected in whole saliva and submandibular saliva but not in parotid saliva, suggesting that the source of antibodies in saliva is plasma transudation. Recently, a study was conducted on individuals from London and the United Republic of Tanzania, in which the use of oral samples obtained using a collection device was evaluated for the detection of antibodies to p24, gp120, and to various synthetic peptides of the HIV-1 V3 major neutralization epitope (41). In all cases (n = 52) antibodies to gp120 could be detected in oral fluid; the titres paralleled those in serum, although they were lower.

These results suggest that oral fluid is a potential specimen source for the measurement of the humoral response to the whole env gp120, and therefore may be applicable for the monitoring of antibody responses in those vaccinated with gp120-derived vaccines.

Collection compliance

One of the advantages of using oral fluids for HIV testing is the potential for a higher degree of collection compliance among subjects being tested for surveillance purposes, thereby reducing sampling bias. There have been several comparisons of the collection compliance rates of subjects for blood versus oral samples (4, 5, 21, 34). In one study, compliance rates were 83.3% for whole saliva compared with 69% for blood obtained by finger-prick (34). Similarly, Coates et al. compared the collection compliance rates with oral fluids and dried blood spots and reported that significantly more subjects agreed to supply oral samples (4). In Rwanda, compliance rates were over 99% for direct collection of whole saliva (dribbling) compared with a similar study that used blood, where the compliance was only 80–85% (P. van de Perre, personal communication, 1993). In a recent study with a sample size of 866, oral fluid samples were obtained from an additional 42 individuals who had refused to give blood (42).

Potential for accurate HIV testing using oral fluids

Most studies that have used oral fluids as samples have incorporated the use of routine HIV tests that
are designed for serum or plasma. Early studies with routine tests showed encouraging results, although the sensitivities were sometimes low (6, 10, 20, 23); later studies included procedural optimizations for serum assays used with oral fluids and resulted in significant improvements in sensitivities (34, 36, 38). The majority of studies report sensitivities and specificities in the range 95–100% and 98–100%, respectively; a few studies (6, 20) have lower indices (Table 1). Optimizations are now considered to be essential if serum assays are to be used successfully with oral fluid samples, and most assays must be modified by increasing the volume of sample, decreasing the amount of diluent, increasing the incubation times and the conjugate concentration, or altering (lowering) the cut-off values.

Rapid and simple non-ELISA tests have also been evaluated for testing oral fluids for HIV antibodies. In a study in the United Republic of Tanzania, the testing of oral fluids collected using a commercial device resulted in excellent test indices in two rapid flow-through-type assays (38). A simple-to-perform passive haemagglutination assay has also been evaluated using whole saliva samples, but with somewhat less success (6). Several commercial companies are developing rapid test systems for use with oral fluids. One such test is a rapid ELISA designed to detect antibodies in whole saliva. This test (SalivaCard, Trinity Biotech PLC, Dublin, Ireland) includes a disposable collection device and utilizes synthetic peptide antigens on a solid support matrix. The antibody component in the oral fluid sample migrates on a chromatographic matrix ahead of contaminating mucus or debris and reacts with the antigens at a reaction port within a few minutes. Other testing systems, i.e., dipstick methods, are also being developed, but at the moment little information is available.

Two studies have indicated that the detection of antibody during seroconversion can be accomplished equally well by testing oral fluids (4, 34), while one study has reported a single oral fluid sample that was negative at the time of seroconversion but positive in a subsequent follow-up sample (24). Other studies have suggested that antibody detection in oral fluids is not affected by the clinical disease stage, the CD4 count, zidovudine (AZT) treatment, or dental status (24, 43, 44).

The first assays developed specifically for testing oral fluids were IgG capture radioimmunoassays (GAC RIAs) and ELISAs (6, 10); a GAC ELISA (IgG antibody capture ELISA) is now available commercially. These assays are based on the principle of capturing IgG antibody by an anti-IgG antibody coated on the solid phase. In essence, this is a means of concentrating IgG from the sample onto the solid phase prior to carrying out a typical ELISA. As noted in Table 1, the results obtained with the GAC ELISAs are generally excellent.

Confirmatory testing of oral fluids

Confirmatory assays such as the Western blot have also been used to test oral fluids, with sensitivities in the range 95–100% (4, 24, 36, 43). In general, antibody profiles are weaker than those obtained with sera, but Western blot testing has the potential to detect all seropositive individuals as well as seroconverters (24). Also, Western blots have been used to detect HIV-specific IgA antibody in infected infants (31). Interestingly, reactivity to the envelope antigens of HIV is usually strong, while that to the gag antigens is weak (7, 27, 45). However, further investigation to determine the accuracy of Western blot and other confirmatory assays using oral fluids collected by different methods is warranted before a recommendation can be made. Similarly, the appropriateness of cost-saving alternative testing algorithms (e.g., WHO strategies I, II, and III) with oral fluids must be evaluated. Currently, Western blot assays are being modified in order to maximize their sensitivity (C. Major, personal communication, 1993).

Assay performance with oral fluid samples

A number of studies have been conducted to determine the accuracy of HIV test methods when used with oral fluid samples and have reported some variability in performance (Table 2). The test indices were calculated using the results from the corresponding serum pairs as reference.

As noted, and with a few exceptions, the studies indicate that most ELISAs, a particle agglutination assay (PAT), several rapid assays, and Western blots can be used to test oral fluids with a sensitivity of 95–100% and a specificity of 99.5–100% (excluding the PAT assay). Of particular note is the excellent specificity, which indicates that the use of oral fluids

| Table 2: Concentration of IgG in various oral fluid components* |
|-----------------|----------------------|
| Oral fluid component | IgG concentration (mg/l) |
| Plasma           | 14 730               |
| Oral mucosal transudate | 3 500             |
| Collection fluid (OraSure®) | 11–47           |
| Whole saliva     | 14                   |
| Parotid saliva   | <1                   |

* Modified from ref. 27.
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may be appropriate as an epidemiological tool, as suggested by Frerichs et al. (5) or as a possible confirmatory strategy (38). The performance of the GAC ELISA, the only test designed specifically to test oral fluids, was excellent (sensitivity, 98–100%; specificity, 97.7–100%). In four of the five studies with this assay a sensitivity of 100% and a specificity of 100% were obtained; in three of the five studies, the sensitivity and specificity were simultaneously 100%; and in one study, the performance of the GAC ELISA was much better than that of a recombinant ELISA (20).

Comparison of the ELISA results obtained with whole saliva (dribble) and with samples obtained using collection devices yielded the following: the mean sensitivity and specificity were 96.0% and 99.9%, respectively, for whole saliva, versus 98.4% and 100%, respectively, using collection devices (sensitivity not included for the study by van den Akker et al. (21)). Although the number of studies and some of the sample sizes were small, the information indicates that test indices for oral fluids are close to excellent. Three studies performed using oral fluids (one using a collection device and two using whole saliva) showed tests to have sensitivities/specificities of 98.3%/100%, 99.2%/100%, and 100%/100% compared with dried blood spot samples (29, 34, 37).

Studies by independent investigators using oral fluids have been performed in several developing countries, including Côte d’Ivoire (28), Mexico (7), Myanmar (5), United Republic of Tanzania (22, 38), Thailand (37) and Zaire (36). These studies have reported sensitivities of 95–100% and specificities of 98–100%, similar to those obtained in developed countries.

Comments

Oral fluid samples for use in the laboratory detection of HIV antibody may offer advantages. In addition, most studies using oral fluids indicate the potential for accurate detection of antibody. However, the limited number of studies, some with small sample sizes, do not provide enough evidence to justify the routine use of these fluids at present for HIV antibody testing. Study designs should be carefully developed to obtain comparable data, taking into account the various epidemiological settings. As occurred during the development of new HIV testing techniques, substantial evaluations must be performed in a variety of situations and geographical locations. Like the situation with other testing strategies, adoption of oral fluid samples would depend on the particular situation and the appropriate selection of tests and samples. The existence of several types of oral samples, the availability of different collection devices, and the large number of HIV tests available dictate the need for more studies. Importantly, if test indices cannot be shown to equal those obtained with blood samples, efforts should be made to obtain those oral samples that are discrepant in order to determine the reason. Users and developers of tests designed to be used with oral fluid samples must comply with the generally accepted ethical and legal standards used for blood testing. Finally, the training of laboratory technicians and the institution of strong quality assurance programmes should be underscored.

Several questions, including the following, remain to be answered concerning the use of oral fluids for HIV testing (9):

— Which is the most appropriate oral fluid to use?
— Which tests produce the most acceptable results?
— Can oral fluids be used for different types of testing situations (e.g., surveillance, diagnosis)?
— What is the best confirmatory strategy to use to verify infection using these fluids?
— Are there ethical concerns which must be addressed?
— What effect do oral diseases have in the collection of an adequate specimen and when testing oral fluids?

Moreover, problems of sample adequacy (quantity and quality of fluid collected, presence of sufficient levels of immunoglobulins) have not been sufficiently addressed. Similarly, there are currently no oral fluid quality assessment panels available for evaluating testing proficiency. Standards and large volumes of reference oral fluid materials that have been well characterized will be required for quality control and quality assurance purposes. Finally, further evaluation to determine the effectiveness of testing oral fluids for antibodies to other infectious agents (e.g., hepatitis, Treponema spp.) must be conducted in order to circumvent the need to collect several different types of samples from the same individual.

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Résumé

Sérodiagnostic de l’infection à VIH sur prélèvements de sécrétions buccales

Cet article présente quelques données élémentaires sur les sécrétions buccales, leur utilisation comme prélèvements pour les tests VIH (virus de l’immunodéficience humaine) et résume les résultats des nombreuses études dans lesquelles les tests VIH sont pratiqués sur ces sécrétions. Les avantages des sécrétions buccales sur le sang sont: meilleure sécurité, en réduisant le risque professionnel lié aux piqûres d’aiguilles, aux coupures et à l’élimination des déchets; plus grande simplicité de la collecte; meilleure observance; possibilité de collecter en groupes; économie, entre autres. Les inconvénients sont les difficultés d’exécution de tests anonymes non corréliés, la dégradation possible des protéines contenues dans les sécrétions buccales si l’on n’ajoute pas de stabilisant, et la difficulté d’obtenir des échantillons de volume suffisant pour les programmes d’assurance de la qualité.

Les liquides prélevés dans la cavité buccale sont la salive, le liquide cervical et les produits de la muqueuse buccale. Les prélèvements sont constitués de mélanges de ces types de sécrétions, quelle que soit la méthode de collecte. Les IgA sont davantage présents dans la salive, tandis que les IgG proviennent principalement du liquide cervical prélevé au niveau des collets dentaires. Bien que la teneur des sécrétions buccales en IgG soit analogue à celle du sang, les quantités sont plus faibles. Les sécrétions buccales peuvent être recueillies directement en demandant au sujet de saliver dans un récipient, ou en utilisant des systèmes de collecte commercialisés (salive et/ou liquide cervical) constitués d’une tige en plastique portant un tampon absorbant, que l’on place sous la langue ou au niveau des collets dentaires; il est également demandé au sujet de mâcher un tampon; le liquide recueilli est ensuite expulsé du tampon et transféré dans un milieu contenant un stabilisant, jusqu’au moment du test.

Les épreuves immuno-enzymatiques (ELISA), les épreuves d’agglutination et les tests rapides ont donné des résultats encourageants pour la détection des anticorps anti-VIH dans les sécrétions buccales. La plupart des études rapportent des sensibilités et spécificités atteignant respectivement 95–100% et 98–100%. Les résultats obtenus avec l’ELISA avec capture d’IgG (GAC-ELISA), épreuve spécialement conçue pour tester les sécrétions buccales, ont été réguliers et meilleurs que ceux des tests VIH de routine dont les modes opératoires ont été optimisés par modification du volume des échantillons, des durées d’incubation ou des valeurs limites. Les sécrétions buccales obtenues au moyen de systèmes de collecte spéciaux ont donné des indices légèrement meilleurs. Les tests de confirmation pratiqués sur les sécrétions buccales permettent de déceler avec exactitude les anticorps anti-VIH, mais avec des profils d’anticorps différents de ceux obtenus sur le sang (dans le Western blot, dirigés contre les antigènes centraux ne sont pas décelés aussi fréquemment que les anticorps dirigés contre les antigènes d’enveloppe). Actuellement, la plupart des études montrent que la mise en évidence des anticorps anti-VIH dans les sécrétions buccales peut convenir pour les études séro-épidémiologiques, mais mettent en garde contre son utilisation pour le dépistage ou le diagnostic.

En résumé, l’utilisation des sécrétions buccales pour le diagnostic sérologique de l’infection par le VIH peut présenter des avantages, et les résultats d’une quinzaine d’études portant sur de petits effectifs ont montré que cette méthode était capable de produire des résultats équivalents à ceux obtenus avec le sang. Toutefois, il reste quelques questions à examiner avant de pouvoir la recommander pour le travail de routine. Ces diverses questions, ainsi que les avantages et les inconvénients de la méthode, sont exposées dans le présent article.

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