A 10-year old boy with a hard nodule on his forearm

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CASE SUMMARY

A 10-year old Iranian boy was referred with a hard nodule measuring 1.5×1cm on his left forearm since 2 months ago. The lesion was raised and had a dry scab on its surface and the adjacent skin was markedly erythematous. No lymphadenopathy was noticed; and further clinical and physical examinations showed no other abnormalities. The family history was not significant.

The lesion was first cleaned with a gauze piece soaked in 70% ethanol. Scrape smears were obtained from the lesion by means of a scalpel blade. Fine needle aspiration cytology (FNAC) was performed from the edge of the lesion using a 22-gauge needle and 10mL syringe when the scrape smears failed to demonstrate diagnostic material. Two smears were immediately fixed in 95% ethanol, while the remainders were left as air-dried smears. The fixed smears were stained by the Papanicolaou method, whereas the air-dried smears stained by Wright–Giemsa (figures 1, 2).

What is the diagnosis?

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Figure 1. Inflammatory infiltrate, rich in histiocytes, lymphocytes and plasma cells. (Wright–Gimsa×400)

Figure 2. The pathogen within macrophages. (Wright–Gimsa×1000)
ANSWER TO PHOTO QUIZ

Diagnosis: Cutaneous leishmaniasis.

Smears from FNAC showed an inflammatory infiltration rich in lymphocytes, histiocytes, a few neutrophils and plasma cells (figure 1). The amastigote form of *Leishmania* was seen within the macrophages and also extracellularly (figure 2). The amastigote form showed typical pale blue cytoplasm along with a pink nucleus and kinetoplast. However, in Papanicolaou-stained smears the organisms were difficult to detect.

FNAC has been extensively used as a diagnostic tool in various parasitic infections. There are numerous reports describing the role of FNAC in the diagnosis of leishmania lymphadenitis (1-4), however, in cases of cutaneous leishmaniasis, scrape smears and skin biopsy are two commonly used methods (5-7).

Cutaneous leishmaniasis can present as both a dry or wet lesion. In dry lesions, scrape smears may not yield diagnostic material, indeed, in such cases FNAC may avoid an unnecessary skin biopsy. To our knowledge, there are only three published reports in which FNAC of a skin lesion has been shown to be useful for leishmaniasis diagnosis (5-7). Guillermo *et al* reported a case of cutaneous leishmaniasis on face of a 10-year old girl (6), and Akhtar *et al* reported a similar case in a 20-year old man (5). The cytologic findings of our study were in agreement with prior studies (5-7), however, the load of parasite was higher in our case. It is well known that the parasite load depends on various factors, such as the distribution of amastigotes, level of host immune response, superimposed bacterial infections of the skin and whether the material has been obtained from active or healing lesions. In cases where the parasites are difficult to demonstrate microscopically, ancillary studies, such as culture and the polymerase chain reaction, can be helpful (8).

Skin biopsy is an invasive technique that may leave scarring, however, due to the shrinkage of the parasites in sections, detection of parasites could be a troublesome task. Meanwhile, some of the other parasitic skin lesions in which parasitic aggregation may be noted in macrophages; i.e. *histoplasma*, *granuloma inguinale* and *rhinoscleroma* comprise the differential diagnosis list (9).

Although *histoplasma* may resemble the amastigotes of leishmania, the use of special stains, such as periodic acid-Schiff and methenamine silver could be employed to differentiate these two entities (9).

In summary, we concluded that in cases of cutaneous leishmaniasis, FNAC is a very fast, reliable, economical tool for accurate diagnosis, especially for dry lesions in which scrape smears are most likely to yield negative results. Its use is particularly recommended in areas where leishmania is endemic, such as the Mediterranean countries.

REFERENCES

