

CANDIDIASIS IN PATIENTS ON CORTICOSTEROIDS

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Summary

In eleven patients on long term corticosteroids 86 specimens were collected from various sites including vaginal, mucous membrane bronchii and skin. Material was collected one to four times from a patient at an interval of 20 to 134 days. Specimens were examined by direct smear in KOH and were cultured for *Candida*. In six patients newer sites got involved. One patient became negative for *Candida* as the dose of corticosteroid was reduced. One patient remained immune to Candidiasis under observation for 134 days.

Candida are yeast like fungi which frequently inhabit the human body. Superficial Candidiasis affecting the mucous membranes and the integument is common¹. Occasionally *Candida* is capable of causing lesions in viscera which are serious to life². Several systemic factors are known to favour candidal infection, such as, diabetes mellitus, vitamin deficiency particularly of B group, antibacterial antibiotic therapy, blood dyscrasias and malnutrition¹. Long term administration of corticosteroid hormones, especially in high dosage, is another factor which favours candidiasis by rendering the recipient abnormally low in resistance^{2,3,4}. Although the disease, for which these hormones are given, is often more responsible for Candidiasis than the therapy, it is impossible to separate one from the other^{2,3,5}.

Material and Methods

Eleven patients from Skin and V.D. wards of V.J. Hospital, Amritsar were chosen for the present study. These patients were likely to be kept on long

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term corticosteroids. Six patients were females and five males; their ages ranging between 22 and 70 years. Seven patients were suffering from Pemphigus (6 pemphigus vulgaris and 1 pemphigus foliaceus) and four from generalised exfoliative dermatitis (3 eczema and 1 psoriasis).

Seven patients had been having corticosteroids on doses of 10 to 50 mg. of prednisolone per day for varying periods of one month to four years before the collection of first specimen for examination of *Candida*. In four patients specimens for *Candida* were examined within 4 days of the start of Corticosteroids. During the period of study they had been on prednisolone 30-80 mg. per day. Three patients had broad spectrum antibiotic (Chloromycetin) for a period of 1 to 3 days before the first specimen for *Candida* was taken.

The specimens collected were examined by (i) Direct smear in 10% KOH and (ii) culture on Sabouraud-type media. In total 86 specimens were collected from skin, oral m.m., vaginal m.m., bronchii, and sputum. Material was collected one to four times from each patient at intervals of 20 to 134 days while receiving the corticosteroids (Table 1).

TABLE 1
Showing Patients with Number of Specimens Examined

S. No.	Specimen	Number of patients with examination				Total Specimens	Total Patients
		1 speci- men	2 speci- mens	3 speci- mens	4 speci- mens		
1	Oral smear	0	6	2	3	30	11
2	Sputum	3	5	2	0	19	10
3	Vaginal smear	0	3	1	2	17	6
4	Bronchial washings	2	3	2	0	14	7
5	Bronchial biopsy	1	2	0	0	5	3
6	Skin	1	0	0	0	1	1

TABLE 2
Showing Reports of Culture for Candida

Material	Positive	Negative	Contaminated	Total
Oral smear	23	5	2	30
Sputum	12	6	1	19
Vaginal Smear	10	5	2	17
Bronchial washings	6	7	1	14
Skin	0	1	0	1
Total	51	24	6	81

Results

KOH Smear Examination:—To begin with only one smear taken from oral cavity was positive. Later, five more cases showed positive smear from the oral mucosa. Smears taken from other sites remained negative on direct examination.

Culture for Candida:— Bronchial biopsies (5 specimens) were not cultured. Of the 81 specimens which were examined by culture 51 were positive for Candida and 24 were negative. 6 specimens were contaminated (Table 2).

Oral Smear:— Six specimens out of 30 were positive by direct smear examination while 23 specimens were positive by culture in 10 patients. Two patients of pemphigus vulgaris with buccal

lesions who were negative for candida to begin with became positive after 23 and 54 days while on 30–50 mg. of prednisolone per day. One patient remained negative even after 134 days while on 30–40 mg. of prednisolone per day. This patient was suffering from exfoliative dermatitis and had no lesions in the mouth.

Vaginal Smear:— In six female patients, 17 specimens were examined by culture out of which ten were positive in 5 patients. One patient of pemphigus vulgaris remained negative for Candida, though she remained under observation for 54 days and had been on prednisolone 30–50 mg. per day.

Sputum:— Out of 19 specimens in 10 patients examined, 12 were positive in 8 patients. Three patients (two of

pemphigus vulgaris and one of exfoliative dermatitis) who were negative for *Candida* to begin with became positive in 28 to 33 days while on prednisolone 30–80 mg. per day. These three patients had positive culture from the oral smear even from the very beginning.

Bronchial Washings:— Out of 14 specimens in 7 patients (3 of exfoliative dermatitis and 4 of pemphigus vulgaris) 6 were positive. In one patient with pemphigus vulgaris who remained under observation for 54 days while on prednisolone 30–40 mg. per day, three bronchial washings done at intervals of 22 days gave negative culture for *Candida*. In this patient oral smear became positive for *Candida* in 54 days while on corticosteroids but sputum remained negative. One patient with exfoliative dermatitis who was negative to begin with became positive 22 days after being on 30–50 mg. of prednisolone per day. In this patient buccal and vaginal smears, and sputum examination showed positive culture for *Candida* even from the very beginning. Two patients who had scanty growth of *Candida* in first specimens had profuse growth in repeat specimen tested after 20 days.

Bronchial Biopsy:— Five specimens in 3 patients were examined histopathologically for evidence of *Candida*. None was positive. Simultaneous bronchial washings, during the collection of these five biopsies, were positive for *Candida* in two cases.

Out of eleven cases one patient with exfoliative dermatitis remained negative throughout (134 days under observation on 30–40 mg. per day of prednisolone). In 6 patients new sites got involved positive results having been present in sputum 3 cases, oral m.m. 2 cases and bronchial washings 1 case. One patient with pemphigus vulgaris who had oral and vaginal candidiasis as well as

positive bronchial washings for *Candida* became negative while on steroids when the dose of prednisolone was reduced gradually from 50 mg. per day to 10 mg. per day in 76 days.

Discussion

Candidiasis has become more common since the advent of corticosteroids and antibacterial antibiotic therapy⁴. Laboratory studies have clearly established the increased susceptibility of animals to candidal infection following the systemic administration of corticosteroids^{6, 7, 8}. The corticosteroids appear to have no direct effect on micro-organisms grown *in vitro*⁹. They have been thought to alter the host's resistance to infection by impairing reticuloendothelial function thus diminishing inflammatory response, antibody formation and also altering antigen antibody reaction⁷.

In the present series in 6 patients new sites got involved by *Candida*. Probably Candidiasis in four of these cases had spread by contiguity from the oral cavity — in 3 cases sputum became positive and in one case bronchial washings became positive (all the four were having positive oral smear). In one patient with exfoliative dermatitis no evidence of Candidiasis was detected even after 134 days of corticosteroid therapy. Candidal infection under steroids therapy may not occur if the patient is not severely ill⁵.

Although, among these eleven patients no relationship could be established between the dose of corticosteroids and incidence of Candidiasis, one case of pemphigus vulgaris who initially had positive oral and vaginal smears and bronchial washings for *Candida*, became negative as the dose of prednisolone was reduced from 50 mg. to 10 mg. per day in 76 days.

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Erratum

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Please read the first sentence of second column as :

“No lesions were seen on any other part of the body. Systemic examination did not reveal any abnormalities.” instead of “No lesions were seen on any abnormalities”