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Skin Manifestations Of Pesticides And Fertilizers In Kashmir Valley, A Prospective Study Carried Out In Tertiary Care

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Abstract

Farming is the process that deals with cultivation and harvesting of crops, growing edible vegetables and fruits. Farming is a worldwide occupation increasing day by day. Most of the Indian population are directly or indirectly associated with it. Farmers use pesticides and fertilizers in agricultural lands to protect crops against various pests, inseticidies and fungi. Pesticides and fertilizers are chemical substances used to increase production as well as achieve better quantity and quality of crops. Nearly all pesticides and fertilizers are extremely toxic and require special precautions while handling and should be used meticulously. Besides causing accidental poisoning they are also capable of causing various occupational dermatosis in farmers . skin being largest organ measuring approximately 1.7-1.9msq i.e about 16-20% of total body weight is most exposed organ. Accidental exposure to pesticides and fertilizers can have serious implications. It is estimated that between 50-60 % of farmers will develop some or other form of skin conditions within 5 year of beginning their occupation. The majority of these diseases are contact dermatitis, urticaria, erythema multiforme, skin pigmentation, onychomycosis, paryonychia and hair disorders, chloracne and skin malignancies.The aim of this study was to identify effects of pesticides and fertilizers on skin in the population associated directly with agriculture.

Keywords: Farmers, pesticides, fertilizers, cutaneous dermatosis

Introduction

Kashmir a paradise on earth is an union territory with an area of 15520.3 km^2 having agricultural land of 389000 hectares. Valley has four seasons spring, summer, autumn and winter. Most of the native population of valley relies on agricultural land and production. For increasing the productivity they tend to use various pesticides and fertilizers. These chemicals pose variety of harmful effects on health of human beings. These maniefstations may be either acute or delayed . These pesticides and fertilizers can pose either topical or systemic effects. Topical effects generally develop at the site of contact. The most commonly reported topical effect with pesticides and fertilizers exposure is contact dermatitis/Irritant dermatitis. Pesticide contact dermatitis was first described by McCord and Kilkee in 1921[1]. Pesticide-related contact dermatitis may be both allergic [2, 3, 4, 5] or irritant [6, 7]. Some other pesticides and fertilizer exposure may present with clinical forms such as urticaria, erythema multiforme, ashy dermatosis, skin hypopigmentation, chloracne, nail and hair loss. Some pesticide components are capable of increasing the skin sensitivity to light which results in phototoxic and photoallergic reactions [8]. Despite the skin problems patients may develop respiratory, gastro-intestinal, central nervous system, cardio vascular problems, toxicity and even death. The aim of this study was to identify effects of

pesticides and fertilizers on skin in the population associated directly with agriculture

Materials And Methods

This study was conducted in tertiary care hospital from April 2021 to November 2021. In our study 300 farmers of age group (25-57) years were included and extremities of age were excluded from the study. The selected patients were evaluated on OPD basis. We categorized patient into three groups. In group 1 we had 120 patients working in apple orchards, Group 2 we had 150 patients working in paddy rice fields. Group 3 we had 30 patients who use to work in their kitchen garden and lawns.

Results

The selected patients were evaluated on OPD basis. In our study number of male patients was 220 (73.33%) and that of females was 80 (26.67%). Mean age was 42.53 years. Most of the patients were from rural areas. Skin manifestations with pesticides were generalised and with that of fertilizers were usually localised. Myriad of clinical cutaneous presentation was noticed in this study.

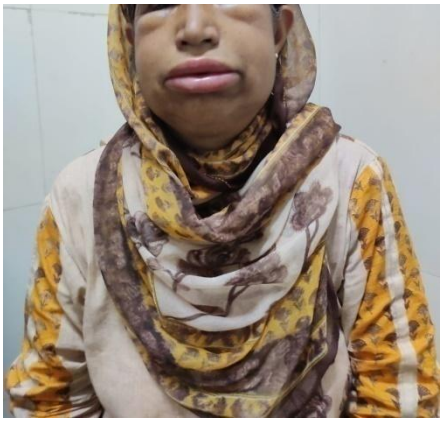
Table1: Gender distribution of patients.

Gender	No. of patients	Percentage
Male	220	73.33%
Female	80	26.67%
Total	300	100%

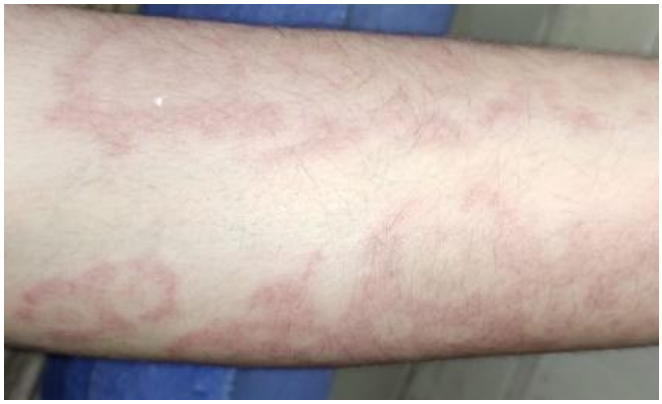
The skin manifestations encountered in selected patients were skin itching, burning sensations, facial paresthesias, eczema, phototoxic, allergic contact dermatitis, irritant contact dermatitis , generalized itching, urticaria, angioedema and other symptoms.

In group1 there was allergic contact dermatitis in about 60 patients. Skin itching, burning, facial paresthesias were seen in 40 patients. Phototoxic, photo allergic contact dermatitis reported in 17 patients and 3 patients with other symptoms. In group B, 65 presented with irritant contact dermatitis, 30 with photoallergic contact dermatitis,25 with urticarial rash, 15 with burning sensation and 15 with generalized itching .Group 3, 10 with urticaria and maculopapular rash, 12 with itching and 8 with angioedema.

Angioedema

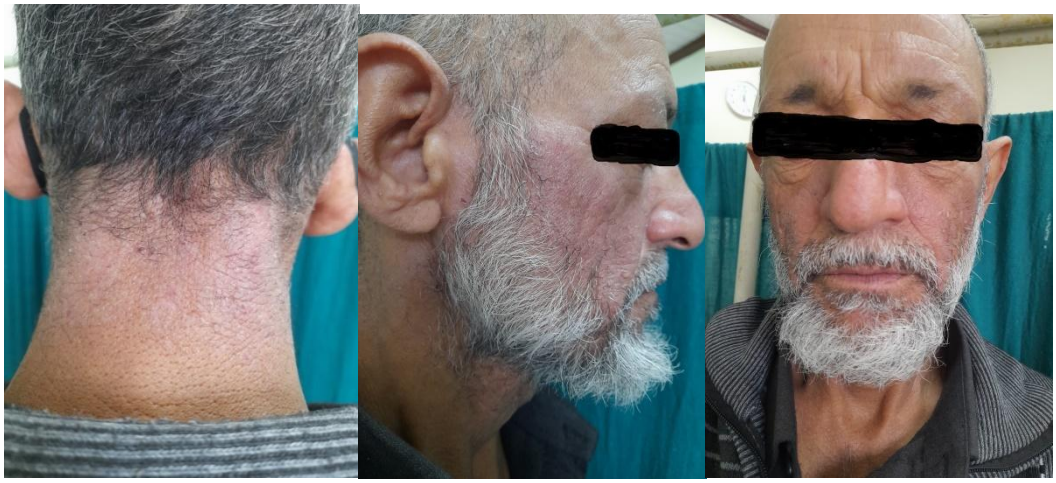


Urticaria

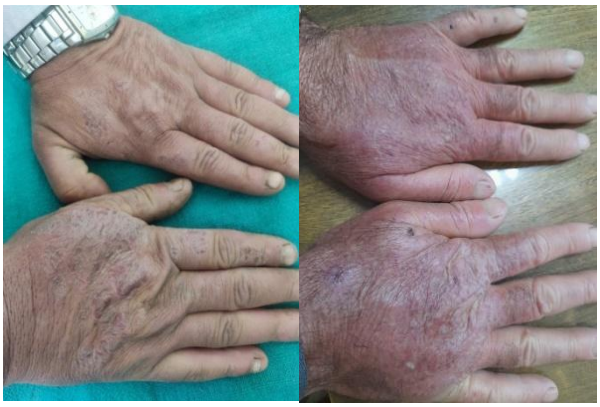


Volume 5, Issue 4; July-August 2022; Page No 755-760

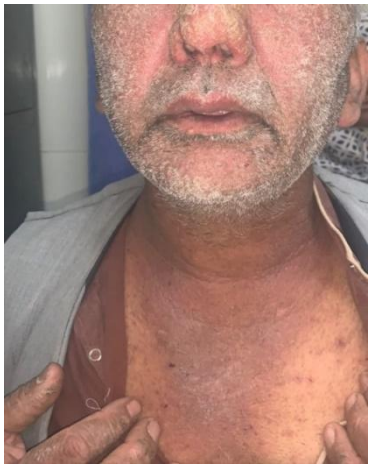
Photo allergic contact dermatitis



Irritant contact dermatitis



Allergic contact dermatitis



Phyto photo dermatosis

The distribution of patients on the basis of symptoms.

Table 2: Group 1

Symptoms	No. of patients	Percentage

Volume 5, Issue 4; July-August 2022; Page No 755-760

Allergic contact dermatitis	60	50.00%
Skin itching, burning, facial paresthesias	40	33.33%
Phototoxic , photo allergic contact dermatitis	17	14.17%
Others	3	2.5%
Total	120	100.00%

Table 3: Group 2

Symptoms	No. of patients	Percentage
Irritant contact dermatitis	65	43.33%
Photoallergic,contact dermatitis	30	20%
Urtricaria	25	16.67%
Burning sensation	15	10%
Generalised itching	15	10%
Total	150	100%

Table 4: Group 3

Symptoms	No. of patients	Percentage
Urticaria	10	33.33%
Itching	12	40.00%
Angioedema	8	26.67%
Total	30	100.00%

Discussion

The farmers of Kashmir valley are mostly engaged with apple orchards, paddy fields and vegetable cultivation. Most of farmers use cattle dung, urea, di-ammonium phosphate (DAP), muriate of potash (MOP) as fertilizers. Pyrethroids, endosulphan, chloropyerons, carbaryl, and imidacloprid manufactured by varios companies are used most commonly pesticide sprays and fungicides in undiluted or in diluted forms after adding water. In our study the patients presented with recurrent skin manifestations as they were constantly exposed to these chemicals.

The skin manifestations encountered in our study were allergic contact dermatitis, photoallergic contact dermatitis, irritant contact dermatitis, skin itching, burning, facial paresthesias, phototoxic, urticarial, burning sensation, generalized itching and angioedema. In our study dermatitis was the most common manifestation of pesticides and fertilizers. A common cause of dermatitis is contact with something that irritates skin and triggers an allergic reaction. In this study it prevails that dermatitis can occur at any age. Occupation that put people in contact with such type of chemicals increase risk of contact dermatitis. With dermatitis skin will look swollen, erythematous, tender with ooze.

Volume 5, Issue 4; July-August 2022; Page No 755-760

In our study photo-allergic contact dermatitis was observed patient presented with classical findings of itching, erythematous papules and plaques present over forehead, cheeks, bridge of nose etc with sparing of skin over eyelids, retro auricular area and nape of neck. In irritant contact dermatitis a chemical substance directly damages the skin and but in allergic contact dermatitis these substance dysregulates the immune system and upregulates proinflammatory markers that mediates the allergic reactions.Urticaria is pink to pale itchy swellings that occurs as a result of mast cell degranulation. Urticaria interfere with daily activities and sleep thus imparing quality of life.. These red weals can be of any size and can appear anywhere on the body. Angioedema present as a painful swelling involving subcutaneous tissues as well as mucous membranes .The various mucosae that get involved oral, ocular , and genital .Swelling most often affects the lips, tongue, periorbital and genital areas.An entity were larynx is involved may cause laryngeal oedema. It is a life threating condition where airway obstruction occursand patient may dies so prompt intervention is required.

Current agricultural practices are based on the wide use of chemical pesticides that have been associated with negative impacts on human health and natural environment [9, 10, 11, 12, 13]. Current agriculture has to deal with food security, chemical pesticides, pesticide resistance and climate change [14–20].Proper clothing, judicisious use and meticulolus handling of pesticides and fertilizers may definitively reduce the skin manifestation and sequelae.

Conclusion

This study shows different pattern of skin diseases. Since there occur frequent contact with these substances thus recurrence and severity with every exposure, proper handling , good knowledge and awareness by various krishivigan Kendra regarding skin and environmental friendly pesticides and fertilizers may reduce harmful effects on skin as well as environment.

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Volume 5, Issue 4; July-August 2022; Page No 755-760

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Volume 5, Issue 4; July-August 2022; Page No 755-760