Change in Incidence of Dermatological Disorders after Major Floods in Kashmir Valley

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ABSTRACT

Introduction: Floods like other natural disorders have significant impact on health of the effected population. Skin faces the major disease burden, being the first one to come in contact with the environmental change. Study objective was to evaluate change in incidence of dermatosis after floods.

Material and methods: This study was a comparative retrospective study involving patients who had presented with cutaneous complaints after floods in our tertiary care centre. Their profile was compared with patients of the same period in the preceeding year. Also patient profile in the immediate post flood period was also compared with late post flood period

Results: Infections and eczemas were significantly increased in the immediate post flood period and essential pruritus in late post flood period.

Conclusion: Floods have a significant effect on cutaneous health, with increased incidence of infections, eczemas and psychodermatosis due direct effect of environmental change and indirect effect through psychoemotional factors respectively.

Keywords: Flood, Dermatosis, Infection, Eczema, Essential Pruritus

INTRODUCTION

Floods are natural disasters that occur occasionally in our part of the country. On the 6th of September 2014 we witnessed massive floods that left thousands stranded inside their submerged houses. The floods directly effected about 40% of the villages (majority of which were completely cut-off for one week) and 30% of urban areas. Thousands of people became homeless and were shifted to camps. The devastating effect on the health care deliverable system of the state was the biggest casualty of the event. Our tertiary care centre is located in the urban flood prone area and catered to its population after one week of onset of floods. Besides, being a tertiary care center, we received patients from affected rural areas, after flood water receeded.[1,2]

Keeping in view the above background we intended to conduct a study to find out the change in incidence of dermatosis among flood affected population compared to the similar period of time in the preceding year.

MATERIAL AND METHODS

This study was a comparative retrospective study conducted in the department of dermatology, STD and Leprosy of our tertiary care centre. All the OPD registrations of our department over a period of three months after the floods, which was available after 1 week of the flood was revised retrospectively The age, sex and clinical diagnosis of each patient was recorded.The first one and a half month (flood group 1) and next one and and half month of registration after floods (flood group 2)were compared with those of the similar period of the year in the preceeding year respectively. Also flood group 1 was compared with flood group 2 to differentiate acute and chronic effects of floods on skin.The skin conditions were classified into twelve major groups. (table-1)

STATISTICAL ANALYSIS

The results were compared using chi-square test. A p <0.05 was considered significant.

RESULTS

In the flood group 1, 1327 patients with dermatological disorders were enrolled in the OPD as compared to 1091 patients in control 1 group. Males predominated the study with a male female ratio of 1.7:1. The ages of the patients ranged from 3-79 yrs with majority belonging to the age group of 40-60years. Urban patients predominated over rural patients in numbers. There was no significant statistical difference in average age, gender and demographic profile of patients in both groups.

Incidence of infections- infestations was significantly higher in the flood group 1 when compared to the control group 1 (P < 0.0001). Tinea pedis was the most common. Bacterial infections also had an significant increase in incidence with folliculitis of lower limbs being the commonest.

The incidence of scabies, insect bites and papular urticaria were significantly higher in the flood group 1 as compared to control group 1.

The incidence of eczemas and acute urticaria was also significantly increased with P of 0.0001 and 0.015 respectively. The incidence of skin appendageal disoders particularly hair disorders was significantly lower in F1 group in comparison to control group 1. Other disorders like

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	F1	F2	C1	C2	*P* 11*	*P* 22**	*P* 12***
Infections and infestations	501	352	292	284	0.0001	0.153	0.001
Eczemas	257	210	144	143	0.0001	0.008	0.028
Papulosquamous	96	123	134	146	0.0001	0.014	0.048
Pigmentary	52	54	63	39	0.0299	0.341	0.843
Appendageal	194	279	288	362	0.0001	0.001	0.001
Autoimmune	30	44	38	42	0.08	0.743	0.098
Neurocutaneous	119	182	78	92	0.1009	0.0001	0.001
Urticaria	42	24	18	19	0.0151	0.759	0.033
Drug induced	19	26	24	28	0.189	0.494	0.295
Trauma	6	1	1	2	0.124	0.604	0.125
Mucosal	9	12	8	8	1	0.654	0.519
Others	2	3	3	2	0.687	1	0.685

**P* 11: *p* - value on comparison of flood group -1 and control group-1; ***P* 22: *p* - value on comparison of flood group -2 and control group-2; ****P* 12: *p* - value on comparison of flood group -1 and flood group-2

Table-1:

papulosquamous disorders were decreased in number but the difference was not statistically significant.

On comparison between flood group 2 and control group 2, the number of patients admitted to our OPD were 1310 and 1167 respectively. There was no statistical significant difference between the two groups with regard to the average age and other demographic factors.

On comparison of clinical profile except for significant difference with regard to generalised psychogenic /essential pruritus ($P < 0.0001$), no statisticaly significant difference was found in incidence of other skin diseases.

On comparison of flood group 1 and 2, there was no statistically significant difference in terms of demographic profile.

The incidence of infections and infestations was significantly reduced. Eczemas did not show any significant difference. The incidence of papulosquamous and psychogenic pruritus was significantly increased in flood group 2 as compared to flood group 1($P < 0.048$, 0.001 respectively).

DISCUSSION

Natural disasters including floods can occur occasionally in any part of the world. Our part of the country witnessed massive floods that left thousands stranded inside their submerged houses and another thousand became homeless and were shifted to camps. The floods directly effected about 40% of the villages (majority of which were completely cut-off for one week) and 30% of urban areas. Our tertiary care centre is located in the urban flood prone area and catered to its population after one week of onset of floods.

Health is the major concern during and after these disasters, especially that of skin, being the first one to contact the environmental change. Studies have been conducted on impact of natural disasters on health, including that of skin. Skin problems were reported as one of the prevalent health conditions following fever, respiratory problems and diarrhoea after 1998 Bangladesh floods.[1] Effect of natural disasters on skin was also reported in a study by Morrone et al.[2]

Our study was conducted with the intention of finding out the change in incidence of dermatosis among flood affected population. We observed a total of 12 groups of patients (table-1), among which infections was the largest group.

Infections and infestations had a statistically significant increase in incidence as compared to the previous year. Among infections superficial fungal infections were the most common with tinea pedis being the most prevalent. Bacterial infections followed, with folliculitis of lower limbs being the most common. Among infestations scabies was the most common. Lee et al also found infections and infestations to be the most prevalent dermatosis, after a tsunami in Indonesia, with tinea corporis being the most common.[3] Bayramgurler et al also reported infections to be the most prevalent dermatosis after an earthquake as compared to control group with tinea pedis being the commonest.[4] Similar finding was noted by Oztas et al who observed parasitic disorders to be the most common group.[5] Skin infections were also a major disorder identified after 2010 moonsoon flooodin in pakistan.[6] On the contrary, Vachiramon et al observed inflammatory disorders to be most prevalent followed by infections.[7] However, most of these inflammatory disorders were secondarily infected.

This increase can be explained by increased skin vulnerability due to maceration from excessive humidity and friction due to damaged infrastructure, increased exposure to contaminated soiled objects in the post flood period, unhygienic and crowded living conditions, malnutrition and limited access to health care.

Eczema was the second most common dermatosis. Eczemas were also the most common dermatosis in a study by Vachiramon et al.[7] Similarly in a study by Lee et al,[3] eczemas were second most common skin problem after a tsunami.

Increase in incidence of these dermatoses can also be explained by increased skin vulnerability due to maceration from excessive humidity and increased exposure to contaminated soiled objects due to damaged infrastructure in the post flood period.

Acute urticaria also showed a significant increase in the immediate post flood period. Most of the patients recovered within few weeks. Increase can be explained by increased exposure to allergens and lack of hygienic environment.

Psychogenic / essential pruritus was significantly

increased in late post flood period. These were labelled after thorough investigation, application of scabicidal and intense moisturisation. Natural disasters can induce psycho-dermatologic disorders that have a primary dermatopathological basis but that may be influenced by psycho emotional factors.[8,9] Kodama et al[10] reported an exacerbation of atopic dermatitis symptoms after a major earthquake, and Stewart and Goodman[11] reported an acute urticaria case immediately after an earthquake. A study by Oztas et al[5] showed that quite a high number of survivors were effected with dermatological disorders with psychogenic basis after Duzce earthquake.

Pigmentary disorders increased in late flood period due to increased outdoor activities involved in rebuilding and establishment of damaged infrastructure.

Other disorders did not show a significant difference, although a slight reduction was noted in immediate post flood period. This might be due less importance attached to these disorders at the time of acute crisis faced by the patients due to floods and resulting destruction.

Although our study was a large study involving about 5000 patients over a period of 3 months and first of its kind in our sub-continent to the best of our knowledge, it also had its limitations. Being a retrospective study, diagnosis was solely clinical. No investigations were possible at the time of floods due to damaged infrastructure. Our study being a hospital based study and not a door to door study of flood areas, only included the patients who visited the hospital.

CONCLUSION

In summary, we concluded that the floods have a significant effect on cutaneous health. Floods alter the environmental hygiene and moisture content immediately leading to increased incidence of infections and eczemas and have a long-term impact on psychoemotional factors leading to increased incidence a of psychodermatological disorders. Immediate excess to health care facilities can prevent this change and help in its management in a proper way.

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