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Pathology

A STUDY ON CONNECTIVE TISSUE NECROSIS AND THEIR BASIC PROBLEMS

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ABSTRACT Cells are injured due to harmful stimulus habitually which may lead to the death of cells and this type of cell death is termed as necrosis. Usually, two types of appearances i.e. microscopic and macroscopic are shown after cell is died by necrosis. It is observed that the tissue loss is occurred in few hours in case of microscopic appearance.
After cell death, the basic structure of necrotic tissue is maintained in coagulative necrosis. Necrotic tissue is a type of medical condition where dead cells are found in the body organs. The current paper highlights the connective tissue necrosis and their basic problems.

KEYWORDS : Necrosis, Injury, Tissue

INTRODUCTION

Due to loss of oxygen and blood, some cells are died in the body. As a result, the acidic form of the cells is generated which yields enzymes. These enzymes then start decomposing the cells.

Consequently, the risk of damaging other organs of the body is increased. Sometimes, a leakage is observed in cell membrane. In some cases, fluid starts accumulating and the explosion takes place in the cell walls due to high pressure exerted by high quantity of fluid accumulated there.

Usually, skin necrosis is responsible for the necrotic tissue. Also, in some cases, cells start digesting themselves after enzymes release, which causes the death of cells. These cells are supposed to be an essential component of living tissue of the skin.

External injury is also responsible for the necrosis. This injury can be found in any organ of the body. Necrotic tissue is also related to skin necrosis where a number of cells are died in a particular organ. The health status of the human body suffering from necrotic tissue starts falling down and many diseases like skin cancer are observed in the body.

The skin color starts changing due to necrotic wounds. The color of the organ where the cells are died becomes dark brown or black. The biggest risk in case of necrotic tissue is that the chances of spreading the infections get increased as a result the whole body gets infected.

Sometimes, the whole structure of the affected tissue is changed due to an injury. Changes in the tissue are observed continuously for a time period. The role of collagen fibrils is very important in case of any injury in the connective tissue.

Also, the bio-logical nature of the connective tissue starts changing after some serious wounds or injuries in any organ of the body. Before necrosis, a number of degenerative changes are observed in the connective tissue.

Furthermore, a systemic response is observed during necrosis as it is regarded as a proper system. Many research works are going on to get more details about the necrosis process of the connective tissue and their related problems.

After alkali injury, the ulcer was found to be moist in the dermal connective tissue necrosis. Biochemically, some losses in proteins were observed in the alkali injury. Furthermore, in the regenerating stage, a sudden increase in the serum sialic acid was reported.

After the cold injury, the study was divided into three phases i.e. the prenecrotic , necrotic and regenerating stage. In the pre-necrotic stage, a loss in characteristics like tinctorial of collage was observed. Also, an immediate rise in the positive materials was noticed at this stage.

RESULTS AND DATA INTERPRETATION

Table 1: Values of water content, total protein, Total Cholesterol and Sialic acid after thermal injury

	Water Content	Total Protein	Total Cholesterol	Sialic Acid
Control	222.4 0.46	480.34 0.45	3.58 0.039	80.69 2.23
P.D.S.	247.7 0.41	357.15 0.92	1.40 0.100	197.55 0.37
Days after injury				
1st Day	179.6 0.34	362.51 0.44	1.08 0.015	177.0 1.1
2nd Day	209.6 0.34	403.16 0.17	1.00 0.05	220.1 1.2
3rd Day	215.8 0.24	398.03 0.69	2.00 0.051	183.24 1.7
7th Day	210.6 0.23	340.63 0.37	2.13 0.101	117.4 0.5
14th Day	215.0 0.57	330.34 0.38	3.38 0.025	124.36 0.9
21st Day	210.5 0.35	334.64 0.36	3.68 0.07	125.4 0.8

DATA INTERPRETATION:

It is clear form Table 1 that water content kept on increasing till third day. Also, it can be observed that total protein started decreasing after second day and an increase in cholesterol was reported after second day. A variation in the level of Sialic Acid was noticed after thermal injury.

Table 2: Values of water content, total protein, total cholesterol and Sialic acid after Alkali injury

	Water Content	Total Protein	Total Cholesterol	Sialic Acid
Control	222.4 0.46	480.34 0.45	3.58 0.063	80.09 0.49
P.D.S.	219.2 2.86	207.1 0.52	1.33 0.051	197.55 0.37
Days after injury				
1st Day	249.6 2.43	172.0 0.54	1.15 0.005	35.43 0.49
2nd Day	339.6 2.12	145.6 0.27	1.00 0.028	8.80 0.12
3rd Day	335.8 0.24	178.03 0.49	2.47 0.150	14.63 0.67
7th Day	240.4 0.53	310.03 0.61	2.33 0.070	100.43 2.49
14th Day	255.2 0.47	320.34 2.30	4.60 0.039	135.56 0.62
21st Day	258.3 0.35	344.14 0.46	2.47 0.040	189.26 0.42

DATA INTERPRETATION:

It is clear form Table 2 that Protein tended to rise just after second day in case of alkali injury whereas variation was observed in case of water content and cholesterol. On the other hand, an increase in Sialic acid was recorded after second day.

Table 3: Values of water content, total protein, total cholesterol and Sialic acid after Cold injury

	Water Content	Total Protein	Total Cholesterol	Sialic Acid
Control	222.4 0.46	480.34 0.45	3.58 0.033	80.09 0.49
P.D.S.	159.8 0.21	207.5 13.22	1.38 0.005	197.55 0.37
Days after injury				
1st Day	253.5 1.03	772.5 16.44	0.75 0.005	99.78 3.09
2nd Day	309.1 0.92	625.8 2.1	0.45 0.008	165.1 11.1
3rd Day	215.4 1.34	590.2 13.98	0.70 0.0015	54.6 3.3
7th Day	270.6 1.03	570.5 9.91	0.80 0.0010	31.8 0.9
14th Day	278.9 2.77	452.2 6.30	1.01 0.013	78.12 2.6
21st Day	293.4 0.35	418.4 8.06	1.25 0.012	83.1 1.4

DATA INTERPRETATION:
It is clear from table 3 that level of protein kept decreasing after cold injury. On the other hand, changes were observed in water content level. Whereas, a rise in the value of cholesterol was observed after second day to the last day i.e. 21st day. Similarly, increase in Sialic acid was recorded after 7th day.

Table 4: Values of water content, total protein, total cholesterol and Sialic acid after Ultra-violet injury

	Water Content	Total Protein	Total Cholesterol	Sialic Acid
Control	222.4 0.46	480.34 0.45	3.58 0.033	80.09 0.49
P.D.S.	439.8 2.19	348.0 0.43	1.98 0.05	197.55 0.37
Days after injury				
1st Day	203.1 1.13	432.1 0.68	1.05 0.01	162.08 2.1
2nd Day	216.6 0.78	495.3 2.4	1.06 0.018	175.1 1.1
3rd Day	165.2 0.70	401.9 13.1	1.71 0.01	134.3 1.4
7th Day	180.3 1.02	389.3 4.1	1.20 0.010	131.1 1.5
14th Day	288.1 1.40	384.1 5.9	1.60 0.023	120.4 2.3
21st Day	301.1 0.97	366.8 2.6	1.65 0.022	107.1 1.2

DATA INTERPRETATION:
It is clear from Table 4 that total protein started decreasing after second day. After ultra-violet injury, the Cholesterol increased after 7th day and an increase in water content was observed after 3rd day. On the other hand, the value of sialic acid kept falling down after second day.

Table 5: Values of water content, total protein, total cholesterol and Sialic acid after Radiation injury

	Water Content	Total Protein	Total Cholesterol	Sialic Acid
Control	222.4 0.46	480.34 0.45	3.58 0.038	80.09 0.49
P.D.S.	189.6 1.3	475.1 11.40	1.68 0.095	197.55 0.37
Days after injury				
1st Day	198.8 0.5	601.3 10.68	0.76 0.006	152.1 1.8
2nd Day	195.2 0.7	607.7 12.1	0.73 0.004	205.1 4.49
3rd Day	205.7 0.4	604.4 1.1	1.51 0.001	164.3 2.4
7th Day	181.3 0.9	410.23 5.2	3.23 0.030	169.1 5.5
14th Day	188.4 0.6	450.9 8.3	4.60 0.010	160.4 0.51
21st Day	186.4 0.3	434.6 15.6	4.15 0.032	137.1 5.2

DATA INTERPRETATION:
It is clear from Table 5 that after radiation injury, a variation in the level of protein as well as water content was observed during the whole study. On the other hand, an increase in Cholesterol level was observed from second day to 14th day. Also, the value of sialic acid started falling down after 7th day.

DISCUSSION
Necrosis of the connective tissue was performed in rats in terms of five several injuries. These injuries included thermal, alkali, cold, ultra-violet and radiation injuries. After the injury, the study was performed for 21 days. It was observed that due to thermal injury, the necrosis of dermal connective tissue was found which remained throughout the whole study period. A sudden loss in collagen and coagulated mass was observed in the necrosis. Also, a fall in water content was also found in the dermal necrosis; biochemically.

In terms of biochemical, rise in water content was reported during the pre-necrotic stage. Also, a decrease in the level of protein and soluble citrate was observed at this stage. The necrotic and the regenerating stages were found to be similar with respect to the thermal and alkali stages.

In terms of bio-chemical, some kinds of variations were found in degrees in terms of reduced soluble collagen. In the regenerating phase, moderate level of serum sialic acid was observed.

In the regenerative stage, the feature of restoration was indicated in terms of bio-chemical factors. It was observed that in all five types of injuries, the behavior of all the supporting components was not similar which resulted in the post-necrotic period as all the bio-chemical variables were allowed to follow the necrotic time period.

These biochemical factors were also affected by the overlapping status where these injuries had to vitiate. In case of rations and ultra-violet injuries, these parameters were not found in any necrotic period causing any alteration in the components.

During thermal injury, the level of insoluble components was decreased in the tissue. Among all five injuries, the level insoluble fraction was very low during the radiation injury and this level was found to be at moderate level in case of alkali and cold injuries.

Also, during thermal and alkali injuries, the soluble fraction of citrate was recorded to be very low. On the other hand, the level of this fraction tended to increase during ultra-violet and radiation injury resulting in the change in the behavior of bio-chemical parameters.

CONCLUSION
In the regenerative phase the complete morphological restoration is lacking in most of them, but the biochemical parameters were indicative of absence of complete restoration even when the morphological features were suggestive. These parameters were not again fully indicative of the regener - ation as one observed in wound healing. This could be due to the overlapping situation present in this period. Hence, this period may be redesignated conveniently in the post-necrotic phase.

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