MAST CELLS IN THE ENDOMETRIUM IN DYSFUNCTIONAL UTERINE BLEEDING AND POST-ABORTAL BLEEDING

by

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The observation of a large number of mast cells in the human placenta by Latta and Beber (1953) led these workers to suggest that the metachromatic granules of these mast cells were the source of heparin in the placenta, which by mixing the intravillous blood, rendered it incoagulable. It was further suggested that similar cells in the endometrium could serve as a source of locally available heparin which mixed with menstrual blood and produced free bleeding. This observation offered a rationale for the use of antiheparin drugs such as toluidine blue and protamine sulphate in treating certain cases of dysfunctional uterine bleeding. The useful role of these drugs in such cases has been reported by a number of workers (Allen *et al* 1949; Rumbolz *et al* 1952; Scholz, 1957). Rumbolz and Greene (1957) further reported that as compared to normal endometrium, mast cells are increased in pregnancy and certain cases of dysfunctional uterine bleeding associated with a secretory endometrium. Saigal and Balasubrahmanyam (1963) also observed an increase in the endometrial mast cell count in patients with dysfunctional uterine bleeding who had a secretory endometrium as well as in patients after abortion. That endometrial mast cells are increased after abortion has also been shown by Michels (1938) and Asplund and Holmgren (1947).

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Material and Methods

In this investigation the endometrial mast cell count has been studied in 30 patients with dysfunctional uterine bleeding and in 15 patients following incomplete abortion. The distribution of patients with dysfunctional uterine bleeding into different clinical types is shown in Table I. In another fiteen women who had had incomplete abortion the endometrial mast cell count was also studied.

TABLE I

Clinical type of dysfunctional uterine bleeding	No. of cases
Menorrhagia	9
Metrorrhagia	8
Menometrorrhagia	6
Polymenorrhoea	1
Dysfunctional uterine bleeding following abortion	6
Total	30

Paraffin sections of the endometrium of 5 μ thickness were stained with 0.2% toluidine blue in acetate buffer, and studied under the oil immersion lens of the light microscope (magnification x 700). The endometrial mast cells were counted per 20 oil immersion fields (O.I.F.). in each case. The detailed technique of blocking of tissues and the sectioning and the method of mast cell counting has already been described in our previous communication (Mehra *et al* 1970).

Comments

An analysis of the results obtained revealed that age, parity or duration of complaints did not have any significant correlation with the mast cell count of the endometrium. The clinical type of dysfunctional uterine bleeding and the histopathological picture of the endometrium also showed no definite relationship with the mast cell count except in the 6 patients who had dysfunctional uterine bleeding following an abortion. The period of bleeding varied from 15 to 45 days after abortion in these cases and bleeding was of menometrorrhagia type. Histopathological examination of a number of sections in each case did not show any decidual tissue so that the possibility that these were cases of incomplete abortion was ruled out. Five out of these 6 patients had a high mast cell count i.e. 15.3, 21.5, 46.0, 47.2 and 66.8/20 O.I.F. respectively. All these 6 patients showed a hyperplastic non-secretory endometrium. Of the other 24 patients in this group, only 4 showed mast cells (3.8, 6.3, 8.2 and 20.0 Cells/20 O.I.F. respectively) while the other 20 patients did not display any mast cell in the endometrium. When analysed from the standpoint of whether the patient was bleeding or not at the time of obtaining the endometrial sample by curettage, no statistically significant difference was noted between the 2 groups ($P > 0.05$). This observation is in contrast to our findings in cases of bleeding following insertion of an intrauterine device where it was found that mast cells were significantly more in patients who were bleeding at the time of obtaining the endometrial sample (Mehra *et al* 1970). It is postulated that increased mast cells in cases of abnormal bleeding following insertion of an intrauterine device may be the result of a local effect caused by the device.

Of the 15 patients who had incomplete abortion, 7 showed clear-cut evidence of mast cells. The numbers ranged from 4.2 to 21.0 cells/20 O.I.F. Similar findings of increased mast cells following abortion have been reported by other workers (Asplund and Holmgren, 1947; Michels, 1938; Rumbolz and Green, 1957; Saigal and Balasubrahmanyam, 1963).

Summary

In order to study the role of endometrial mast cells, in the pathogenesis of dysfunctional uterine bleeding in

women, endometrial biopsies from 30 cases of dysfunctional bleeding and 15 cases of incomplete abortion were scanned for mast cells and histopathological features. It was observed that 5 out of 6 cases of dysfunctional uterine bleeding following a complete abortion had increased number of mast cells and 7 out of 15 cases of incomplete abortion also showed mast cell proliferation. This study has demonstrated that endometrial mast cell increase is not associated with all types of dysfunctional bleeding.

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