

# ARIAS-STELLA REACTION OF ENDOMETRIUM IN INTRAUTERINE ABORTION

by

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Arias-Stella (1954) emphasized the atypical changes in the endometrial glands in the presence of chorionic tissue which are known "Arias-Stella Reaction." Presence of such changes cannot be related to the site of pregnancy as it is seen both in intrauterine and extrauterine pregnancy. Truemmer (1956), Berthelsen (1957), Frederiksen (1958, 59), Birch and Collins (1961), Mackles *et al* (1961), Lai-uppa and Cavanagh (1963), Skulji *et al* (1963), DeBrux and Ancla (1964) and Berhardt (1966) have stressed the value of finding such changes in making presumptive diagnosis of ectopic pregnancy and the fact that such changes occur also in intrauterine pregnancy have been ignored.

However, Arias-Stella (1954), Roach *et al* (1960), Pildes and Wheeler (1957), Sveneene (1957) and Lloyd *et al* (1965) studied such changes in intrauterine pregnancy.

The purpose of this study is to find out the reliability of the Arias-Stella reaction in the diagnosis of intrauterine pregnancy.

## Material and Methods

One hundred and seventy-one cases with the evidence of products of conception in the slides were studied from 1965 to 1970 at the Kamala Nehru Memorial Hospital, Allahabad. The endometrium was found in 133 cases.

The Arias-Stella reaction in glandular epithelium was diagnosed on the following criteria (Lloyd *et al*, 1965).

**Nucleus** Increase in size upto 2-5 times associated with hyperchromasia or pyknosis and often folding of nuclear membrane.

**Cytoplasm** Abundant, vacuolated and usually eosinophilic. Desquamation of such cells into the lumen of glands.

Such changes in more than two glands were considered as positive (Bernhardt 1966). Nuclear alteration was considered as more significant for positive cases while secretory activity or the arrangement of the glands as being non-essential to this reaction. (Frederiksen 1959, Roach *et al*, 1960).

## Results

One hundred and seventy-one cases of intrauterine abortion were studied. The endometrium was found in 133 cases, of which proliferative phase was in 54 cases and secretory phase in 79 cases. The Arias-Stella reaction was found only in 18 cases. (Table I)

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TABLE I  
Showing Incidence of Arias-Stella Reaction in Endometrium

Cases	1970	1969	1968	1967	1966	1965	Total
Total cases of Abortion	30	53	20	21	28	19	171
No endometrium	6	18	3	2	6	3	38
Proliferative	6	16	8	7	10	7	54
Secretory	18	19	9	12	12	9	79
No. of positive	5	6	-	2	3	2	18
Percentage	20.8	17.1	-	10.5	13.7	12.5	13.5

As a control endometrial curettings from 50 patients with late secretory endometrium was reviewed. The reaction was found in none of the cases.

#### Discussion

In this study the Arias-Stella reaction was found in 13.5% of cases of intrauterine abortion (Figs. 1 and 2). The incidence of such changes has been reported as low as 0% to as high as 70%. (Table II). It is probable that the wide range

as in secretory phase while Berthelsen (1957) and Overbeck (1962) found mitoses in atypical cells.

Many theories have been postulated to explain the reaction. Arias-Stella (1955a, b.) noted such changes in animal experiments as a result of combined oestrogen and gonadotrophin therapy. The nucleus was enlarged and vesicular. Such changes were not obtained by giving oestrogen or chorionic gonadotrophin alone. In animals where castration had been carried out

TABLE II

Showing Incidence of Arias-Stella Reaction associated with intrauterine pregnancy

Author	Year	No. of cases	Positive	
			No.	%
Arias-Stella	1954	182	20	10.9
Pildes and Wheeler	1957	50	35	69.0
Svensen	1957	40	5	12.5
Roach et al	1960	225	-	0.0
Lloyd and Fienberg	1965	63	43	70.0
Present study	1971	133	18	13.5

of results may be due to different criteria used, variation in the amount of tissue available as in hysterectomy specimen and curettings.

In the present series Arias-Stella reaction was seen only in secretory phase of endometrium and no mitotic bodies were found in the atypical cells. Similar observation was also noted by Lloyd *et al* (1965). However, Arias-Stella noted atypism of glands in proliferative as well

combined oestrogen and progesterone treatment resulted in endometrial aberration and as a result it was concluded that excessive pituitary gonadotrophin production accounted for these effects. Birch and Collin (1961) state that it is possibly a stage through which endometrium progresses in pregnancy or it is a coincidence of inflammation. DeBrux and Ancla (1964) studied the reaction by electron microscopy and believed that the appearance of

the cell suggest a marked secretory hyperactivity of some as yet unknown substance rather than a degenerating process. Lloyd and Fienberg (1965) were of the opinion that the changes in the endometrial cells were involutinal in nature. They suggested that decreased hormonal level after foetal death lead to a regressive secretory endometrium following an initial stimulation by high hormonal levels of pregnancy. The nuclear enlargement begins as a result of hormonal stimulation but the large nucleus becomes pyknotic, infolding of nuclear membrane and vacuolated cytoplasm with hydropic degeneration after foetal death.

#### Summary

The Arias-Stella reaction was studied in 133 slides of intrauterine abortion. This reaction was found only in 18 cases (13.5%) which were all in the secretory phase of endometrium. Various hypothesis explaining this reaction have also been discussed.

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See Figs. on Art Paper IV