Estudio anatómico y morfológico de las células de Hofbauer por medio de impregnaciones argénticas

Anatomical and morphological study of Hofbauer cells by means of impregnation argenticas

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Resumen

Las células de Hofbauer se describieron por primera vez en 1847. Estudios posteriores ayudaron a que se supiera más de dichas células, denominadas "células errantes" y posteriormente células de Hofbauer. La función de las células de Hofbauer, consideradas macrófagas, ha sido discutida ampliamente; según algunos autores su actividad es endocrina e inmunológica, de transportación de substancias nutritivas y función fagocitaria. El presente estudio pretende identificar y describir la morfología de las células de Hofbauer por medio de impregnaciones argénticas específicas para macrófagos, para lo cual fueron utilizadas cinco placentas de primer trimestre, una de segundo trimestre y cinco a término, así como una técnica alternativa de impregnación argéntica para macrófagos. Se halló la llamada célula típica de Hofbauer, de forma esférica u ovoide, grande (20 µm a 30 µm), con apariencia macrófaga e impregnación argéntica para macrófagos. Fueron pocas las células con inclusiones en el citoplasma y su actividad fagocitaria fue mínima ya que se utilizaron únicamente placentas provenientes de embarazos normales. Las células de

Hofbauer presentaron una apariencia de macrófago y además tomaron la impregnación argéntica para macrófagos.

Palabras clave: células de Hofbauer, placenta, impregnaciones argénticas.

Abstract

Hofbauer cells were described for the first time in 1847. Later studies helped that they knew about these cells, called "wandering cells" (or ameboid cell) and subsequently Hofbauer cells. Hofbauer cells function (considered macrophages), has been widely discussed; according to some authors, its activity is endocrine and immunological, transportation of nutrients and Phagocytic function. The present study aims to identify and describe the morphology of Hofbauer cells by Macrophage-specific argentic compounds, which were used five placentas of Q1, one second quarter and five to term, as well as an alternative to Macrophage-specific argentic technique. Typical call Hofbauer cell, found form spherical or ovoid, large (20 µm to 30 µm), macrophage-like and Macrophage-specific argentic compounds. Were few cells with inclusions in the cytoplasm and its Phagocytic activity was minimal since normal pregnancies from placentas were used only. Hofbauer cells presented a macrophage-like appearance and also took the Macrophage-specific argentic compound.

Key words: células de Hofbauer, placenta, impregnaciones argénticas.

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Introduction

The first time that he spoke of cells of Hofbauer was in 1847 (Müller, 1847). They have been little studied, but have also made specific studies on them (Hofbauer, 1903, 1905; Hofbauer and Baltimore, 1925), it helped to know them more and suggest that their number increases when the person is infected with syphilis. After doing these studies called "wandering cells", was changed to Hofbauer cells (Virchow, 1871).

Later returned to study but this time in cases of syphilis, finding a lot of Hofbauer cells in the connective tissue of the stroma of chorionic villi, with macrophage-like appearance (Virchow, 1871). Chorionic villi in placentas of 9-10 weeks of gestation were observed with electron microscope and found Hofbauer cells around mesenchymal cells, characterized by a large number of vacuoles of variable size (Wisloski and Dempsey, 1955). Also, Hofbauer cells were found in placentas premature, mature, post-mature and twins, being more numerous in the premature, without functions Phagocytic, of activities endocrine or forming part of a process immune (Rodway y Marsh, 1956). Also arose in pregnancies without complications in Placentae mature and immature, although they tend to disappear or be extremely limited after the fourth month of gestation (Gray, 1957). There are abundant Hofbauer cells in placentas of first trimester in women living with HIV and in placentas of first quarter of diabetic pregnant women, and they are usually less numerous in term Placentae (Villegas et al., 1994; Calderón et al., 2000).

The origin, function and morphology of Hofbauer cells has been much discussed. After studies in electron microscope of chorionic villi in placentas of 9-10 weeks of gestation, were found Hofbauer cells characterized by being around mesenchymal cells and presenting a large number of vacuoles of variable size (Wisloski y Dempsey, 1955). Most of the authors found them in the stroma of human placental chorionic villi and the discussion arises since their number decreases as runs pregnancy until delivery in normal cases, which does not occur in pathological cases such as diabetes; hence the importance of establishing its origin, morphology and function. Some authors attribute to them a Macrophage Function and other nutritive substances transportation even also endocrine functions.

Taking into account the above aims to identify and describe the morphology of Hofbauer cells by means of Macrophage-specific argentic compounds.

MATERIALS AND METHODS

We worked with silver impregnation techniques for macrophages (Rio-Hortega, 1927; Barroso-Moguel and Costero, 1962) and from these an alternative technique was designed.

Five human placentas first quarter and second quarter of spontaneous abortions and five to term uncomplicated pregnancy were used. Of the five first-trimester placentas, two were fixed in formalin bromide and three in 10% formalin, with a time of fixing one month, eight days and three out of five days. The second trimester placenta was set at 10% formalin, like term placentas, a fixing time five to eight days respectively.
Small portions of placenta were placed in 10% gelatin for 24 hours in a bacteriological oven at 37 ° C to 40 ° C, then they were passed 15% gelatin for 24 h and finally in 20% gelatin for a period of 24 h to 48 h.

The pieces of placenta included in the gelatin were placed in 10% formalin at room temperature for 48 h and cuts of 12 microns to 15 microns were made on a freezing microtome.

Half of the slices were placed in a mixture of 96% alcohol, ammonia and pyridine equally, taking cuts at different times: 10 ', 20', 40 ', 3, 6, 9, 12, and 24 hours, washed in double-distilled water, subsequently passed by carbonate ammoniacal silver in varying periods of 15 " and then double distilled water and placed in sodium hyposulfite 15 ", 30 ": 1 ', 3', 5 ' and 15 ', washed with bidistilled water and dehydrated with 96% alcohol, creosote proceeding to mount with Canada balsam.
The rest of the cuts went through the same process to be introduced into 1/500 gold chloride for 15 to 30 min; half cuts passed through sodium hyposulfite and distilled water and dehydrated in 96% alcohol, then creosote and mounted with the rest of the cuts, after step with gold chloride, subjected to 60 ° C for 10 min to 15 min, then the sodium hyposulfite and as in the previous sections were washed with distilled water, dehydrated and (table 1) were assembled.

DISCUSSION

Silver impregnation technique was used since it is specific for macrophages and this had not been used to try to identify Hofbauer cells. The best that could be seen were those obtained by passing cuts through the following steps: a) Setting the placenta in 10% formalin for 5 to 8 days; b) Inclusion in gelatin; c) Preparation in 96% alcohol mixture, pyridine and ammonia in equal parts; d). Washed in double-distilled water; e) impregnation ammoniacal silver carbonate Rio Hortega for 15 " to 15 '; f) Reduction in 1% formaldehyde; g) Virado in gold chloride cold 1/500; h) Fixed in sodium hyposulfite; i) Washing in doubly distilled water; j) Dehydration 96% alcohol; k) clearance creosote; l) Assembly with Canada balsam.

Cells were localized in the stroma of placental villi of first trimester placenta, and second term, unlike that reported that located on the baseplate and in placental amnion (Fox, 1967). Hofbauer cells are located in the center of placental chorionic villi and sometimes in groups of two or three (Wynn, 1967) (Figure 1). Although there is no agreement between the authors when describing both stellate shapes, elongated or fusiform, by our protocol called typical cell Hofbauer spherical or ovoid, large (20 .mu.m to 30 .mu.m) (Hofbauer and Baltimore, 1925 found ; Rodway and Marsh, 1956; Fox, 1967; Wynn, 1967; Potter, 1953, 1962, Kurt Bernischke and Bourne, 1958; Hamilton et al, 1960).; elongated and stellate forms were scarce

In the cuts passed by gold chloride Hofbauer cells are observed with pink hyaline cytoplasm. This color is the reaction product of gold to lipoid substances found in the cytoplasm (Figure 2), which is consistent with reports that identify the presence of lipoid substances in these cells (Rodway and Marsh, 1956).

Few were observed Hofbauer cells with cytoplasmic inclusions; these are argentofila nature, although it is difficult to be ingested material; no cells with inclusions (; Gray, 1957 Rodway and Marsh, 1956) were found. Instead, they were found cells with a spherical core and without mitotic figures of dark tone to accept the silver impregnation. The number of cells of Hofbauer is abundant in the placentas of first quarter; in the second decrease in mature and are hardly present (Figure 3).

Meanwhile, Hofbauer (1903) noted that the number of cells decreased and remained constant regardless of the age of the placentas, this is because their research was conducted in placentas obtained from mothers infected with syphilis.

Hofbauer cells were more numerous in the placentas of first and second trimesters and less numerous in the placentas at term (Gray, 1957; Paginel and Nguyen, 1964). Similarly, they were more numerous in the placentas of first quarter, less numerous in the second quarter, and practically nonexistent in term placentas.

As pregnancy progresses, the number of Hofbauer cells decreases; however, the number remains constant in abnormal pregnancies with Rh incompatibility, syphilis infection, diabetes, and HIV hydatidiform moals (Villegas et al., 1994; Paginel Nguyen, 1964).

Hofbauer cells and observed showed a spherical core (Boyd, and Hamilton, 1967), and accepted the silver impregnation seeing a dark color (Figure 1).

Function Hofbauer cells is highly controversial; according to some authors its activity is endocrine and immunological (Rodway and Marsh, 1956), transportation of nutrients (Geller, 1958; Thomsen, 1958; Becker and Seifert, 1965; Kaufmann, 1973) and phagocytic function (Hofbauer, 1903 ; Wisloski, and Dempsey, 1955; Fox, 1967; Wynn, 1965 and 1967; Potter, 1953, 1962, Kurt Bernischke and Bourne, 1958; Hamilton et al, 1960. Paginel and Nguyen, 1964; Boyd and Hamilton, 1967; Lepage and Schramm, 1958; Tarzakis, 1963; Lister, 1963, 1964; Allen and Barry, 1970).

CONCLUSIÓN

It was found that Hofbauer cells have a macrophage appearance also take the silver impregnation macrophage, a aurofilo cytoplasm and nucleus very cromófilo. Although few cells with inclusions in their cytoplasm, phagocytic activity was minimal since only placentas from normal pregnancies were used.

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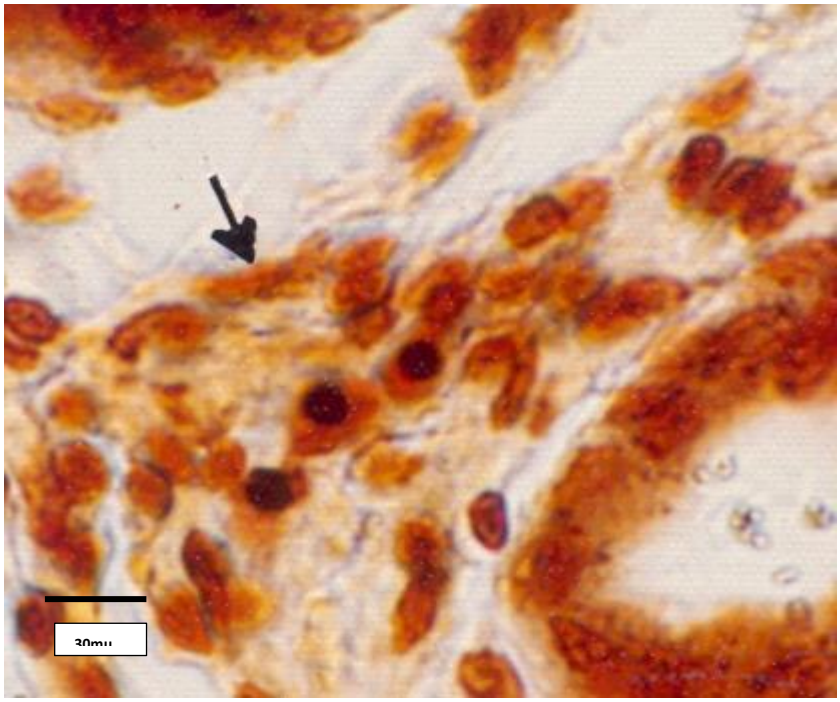

Figura 1. Placenta de primer trimestre donde se observan células de Hofbauer en grupo (100 X).

Figure 1. Placenta first quarter where Hofbauer cells are observed in group (100 X).

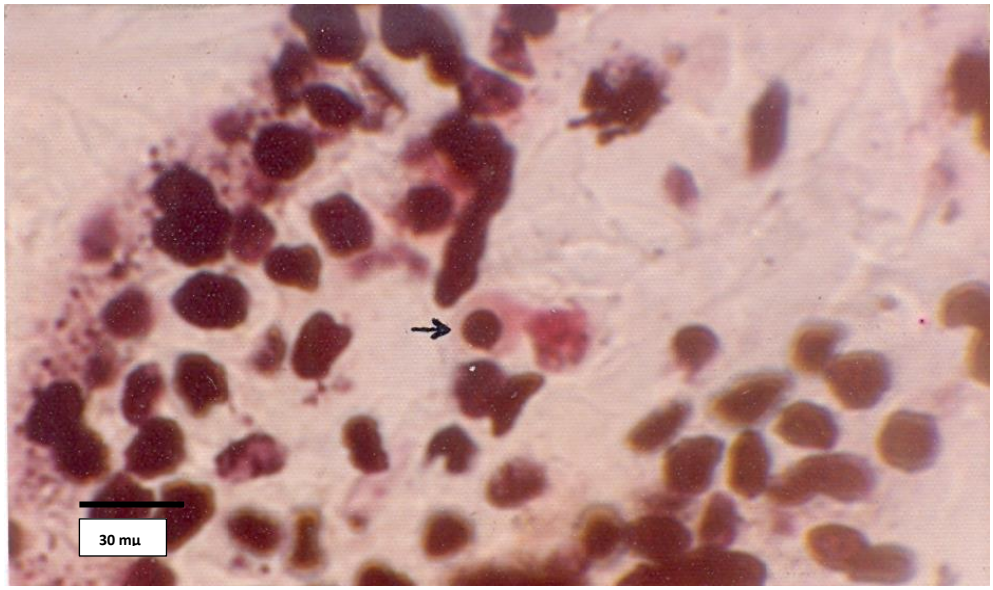

Figura 2. Placenta de segundo trimestre donde se observa una célula de Hofbauer con un citoplasma rosa hialino después de pasar los cortes por cloruro de oro (100 X).

Figure 2. Placenta second quarter, where a Hofbauer cell is observed with a pink cytoplasm and hyaline cuts that gold chloride (100 X) were passed.

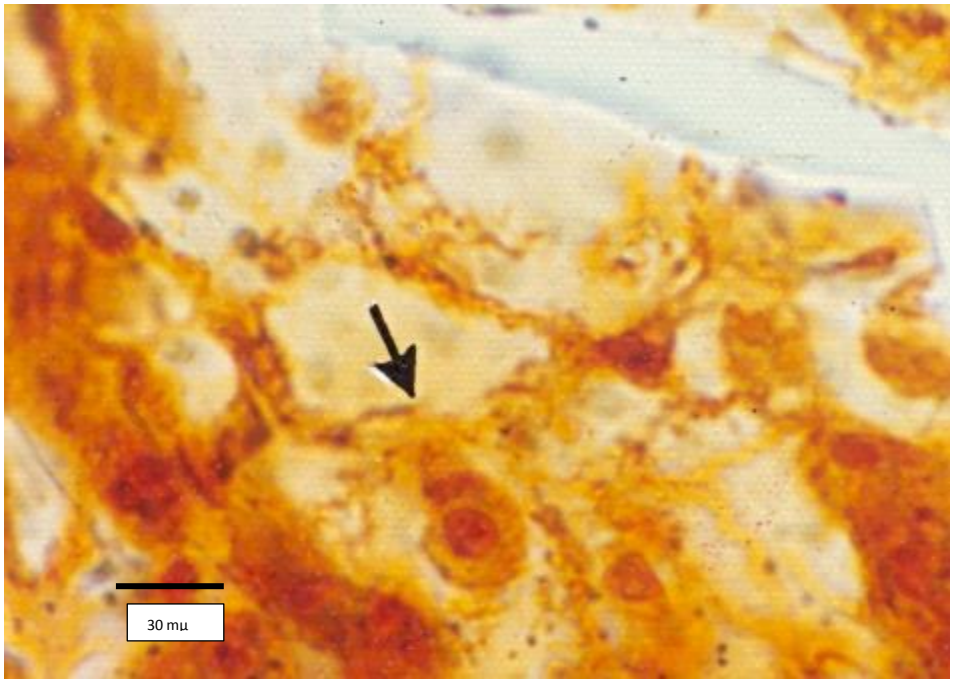

Figura 3. Placenta a término donde se observa una célula de Hofbauer; los cortes no pasaron por cloruro de oro (100 X).

Figure 3. Placenta at term, Hofbauer cell where the cuts did not go through gold chloride (100 X) is observed.

Tabla 1. Relación de las placentas por edad y por la técnica utilizada.

Table 1 Summary of placentas by age and by the technique used.

	Placentas Primer Trimestre					**Placenta Segundo Trimestre**	**Placentas a término**				
Proceso	I 5 a 6 semanas	II 6 semanas	III 12 semanas	IV 7 semanas	V 4 semanas	1a 28 semanas	**1**	**2**	**3**	**4**	**5**
Formol 10 %	+	+	+	+	-	+	+	-	-	+	+
Formol bromuro	+	-	-	-	+	-	-	+	+	-	-
Mezcla Alcohol 96 %,piridina, amoniaco, en partes iguales	-	-	+	+	+	+	-	-	+	+	+
Sin mezcla	+	+	+	+	+	+	+	+	+	+	+
Tiempo de fijación	**1 mes**	**8 días**	**5 días**	**5 días**	**5 días**	**8 días**	**5 días**	**5 días**	**5 días**	**5 días**	**5 días**