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CASE REPORT

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Russell body cervicitis: A case report and literature review

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Abstract

Russell bodies are prominent eosinophilic inclusions seen in the cytoplasm of plasma cells and sometimes outside the cell. There are very few publications available in the English literature on Russell Body Cervicitis. Our case is a 40 year old female patient with a positive screening test for HPV DNA. The cervical surface epithelium in biopsy specimens obtained from the cervix completely have eroded intense vesicular eccentric nuclei and large eosinophilic cytoplasm containing focal Russell Body. The infiltration of dense plasma cells were observed. Our case is the fourth case in the English literature. The case is rare and the etiology has not yet been elucidated.

Keywords: Russell bodies, cervicitis, plasma cells

Introduction

The cervix is known to include lymphocyte and plasma cells that are thought to be part of normal mucosal immunity in healthy females [1-2]. Cervicitis is characterized by noticeable chronic gleet along with a varying neutrophil polymorph reaction [3]. This disease can develop due to the presence of a large number of organisms, and it has a non-infective etiology [4]. However, the histological changes observed in most patients are non-specific [4].

Russell bodies are eosinophilic inclusions that occur in the cytoplasm of plasma cells, and sometimes in extracellular mediums; their immunoglobulin accumulation is conspicuous [5]. Russell bodies were first described in 1890 by Russell as inclusion involving immunoglobulin induced by the abnormal secretion of plasma cells characterized by the ribosomal endoplasmic reticulum [6]. In Russell body cervicitis, the plasma cells are filled with Russell bodies. This condition has also been reported in chronic inflammatory reactions due to its long-term antigenic stimulations, much as in chronic lymphocytic thyroiditis, rheumatoid arthritis, and ulcerative colitis, as well as in neoplastic processes like plasmacytoma and B-cell lymphomas [7-8].

In 1998, Tazawa and Tsutsumi also reported on Helicobacter pylori (H. pylori) infections in gastric mucosa, and they first described it as Russell body gastritis [9]. Russell body cells have been reported to rarely accompany ophthalmitis, esophagitis, gingivitis, gastritis, cervicitis, dermatitis, duodenum ulcers [10-20]. We know of only a few studies that have reported that Russell body cells can occur in cervicitis. The fact that cervicitis, characterized by Russell body particles and the ensuing inflammatory reactions and accompanying findings, has been rarely reported inspired us to present our case report under the category of Russell body cervicitis. For the present study, we scrutinized the literature published in English between 1969 and 2017 (Google Academic and Pub-Med databases) and we included 35 case reports and one article in our paper (Table 1).

Case Study

A 40-year-old woman was admitted to the clinic at our university for inpatient care due to positive results for a HPV- DNA screening test. Re-evaluation of the patient revealed that she had HPV-66 in her cervix. However, during our clinical examination the appearance of her cervix looked suspicious even though her cervical smear had previously been evaluated as normal. A cervical biopsy was obtained through colposcopy and sent to the pathology laboratory.

Macroscopic analysis showed a 4–5 mm grey-white material in the biopsy. In the microscopic analysis, we observed plasma cell inflammation characterized by a dense vesicular, eccentric nucleus and enlarged eosinophilic cytoplasm that had totally eroded the cervical epithelial surface (Figure 1 and Figure 2). The patient was diagnosed with Russell body cervicitis, and she did not report recurring symptoms during the one-year follow-up period.

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Table 1. Cases of Russell Body reported in the literature

	Name of the author / Date of publication	Gender/ age	Location	Accompanying findings	Hp
1	Iwamoto and Witmer [10] (1969)	F-56	Eye	The right eye had a history of uveitis	*
2	Rangan et al. [11] (1992)	M-80	Esophagus	Barrett mucosa	-
3	Tazawa and Tsutsumi [9] (1998)	M-53	Stomach	H. pylori infection	+
4	Zerosi et al. [12] (1999)	20 patients	Teeth	*	*
5	Erbersdobler et al. [13] (2004)	F-80	Stomach	Alcohol and analgesics abuse, plus a previous hematoma treatment	-
6	Rubio [14] (2005)	M-88	Esophagus	Gastro oesophageal reflux and chronic cystitis	*
7	Savaş et al. [15] (2005)	M-70	Stomach	Benign prostatic hyperplasia and hypertension	+
8	Drut ve Olenchuk [16] (2006)	M-34	Stomach	Drug addiction and overconsumption of alcohol	*
9	Steward and Leake [3] (2006)	F-35	Cervix	*	*
10	Wolkersdörfer et al. [17] (2006)	M-54	Stomach	Infection suspected of being Borrelia spp	+
11	Pizzolitto et al. [18] (2007)	F-60	Stomach	*	+
12	Salmo and Farroha [19] (2007)	F-29	Cervix	Three weeks earlier abortion, intraepithelial neoplasia or HPV infection	*
13	Verheij et al. [20] (2009)	M-61	Skin	*	*
14	Habib et al. [21] (2010)	M-75	Stomach and Esophagus	Alcohol consumption, renal failure, dyslipidemia	-
15	Midi et al. [22] (2010)	F-50	Stomach	H.pylori infection	+
16	Coyne and Azadeh [23] (2011)	M-49	Stomach	*	-
17	Savage et al. [24] (2011)	M-55	Stomach and duodenum	Intravenous drug user. Hepatitis-C positive, diabetic patient (Type-1)	-
18	Wolf et al. [25] (2011)	M-67	Stomach	Benign duodenal mucosa and lymphoma	+
19	Cambruzzi et al. [26] (2012)	M-73	Stomach	Stomach cancer	+
20	Choi et al. [27] (2012)	M-55	Stomach	A chemotherapy treatment due to total laryngectomy (carcinoma with benign differential squamous cells)	+
21	Bhalla [28] (2012)	M-82	Stomach	Early-diagnosed stomach cancer	-
22	Miura et al. [29] (2012)	F-63	Stomach	HIV positive	+
23	Yoon et al. [30] (2012)	M-57 M-43	Colon Colon	* Colon cancer of the two older brothers The patient had no diseases	+
24	Araki et al. [31] (2013)	F-74	Stomach	History of dementia, plus obliterating atherosclerosis in the lower extremities	+
25	Bhaijee et al. [32] (2013)	M-69	Esophagus	Barret esophagus	-
26	Chen et al. [33] (2013)	F-59	Stomach, duodenum, and colon	Gastroesophageal reflux, diabetes mellitus, chronic obstructive lungs, hypertension and obesity. Previous surgical history left side mastectomy for breast cancer, plus abdominal hysterectomy	+
27	Lee et al. [34] (2013)	F-60	Stomach	*	+
28	Takahashi et al. [35] (2013)	M-77	Duodenum	Left nephro-ureterectomy for ureteral cancer, plus chemotherapy and radiotherapy for Paraaortic lymph node (PAN) metastasis	+
29	Foda et al. [36] (2014)	F-35	Cervix	*	*
30	Muthukumarana et al. [37] (2015)	F-44	Stomach, colon and duodenum	History of diabetes mellitus, plus transplantation of kidney and pancreas	-
31	Munday et al. [38] (2015)	F-78	Stomach and duodenum	Congestive heart failure, atrial fibrillation, chronic obstructive lung disease and renal failure, diabetes and hypertension, diverticulitis, rotator cuff repair, plus sigmoid resection for carpal tunnel release surgery	-
32	Antunes et al. [39] (2016)	F-79	Esophagus	Persistent gastro-oesophageal reflux	-
33	Coates et al. [40] (2016)	M-62	Colon	Hyperlipidemia, benign prostatic hyperplasia, depression, hypertension, complicated diverticulitis (CD)	
34	Goto et al. [41] (2016)	M-64	Duodenum	Presence of a nodule in the size of 2 cm in the left lung (segment 8)	-
35	Nishimura et al. [42] (2016)	F-64	Stomach	Bronchiectasis	+
36	Zhang et al. [43] (2016)	M-69	Stomach	Using anti-hypertensive drugs for hypertension for ten years. Plus, coronary atherosclerosis heart disease for 4 years	+

F=Female; M=Male; Hp=Helicobacterium pylori; *Unattainable data

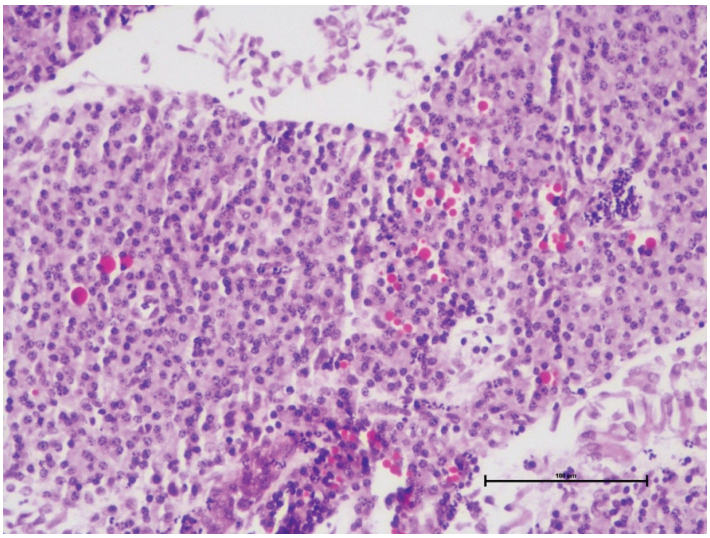

Figure 1. The endocervical polyp contained numerous plasma cells with intracytoplasmic Russell bodies (H&E 10)

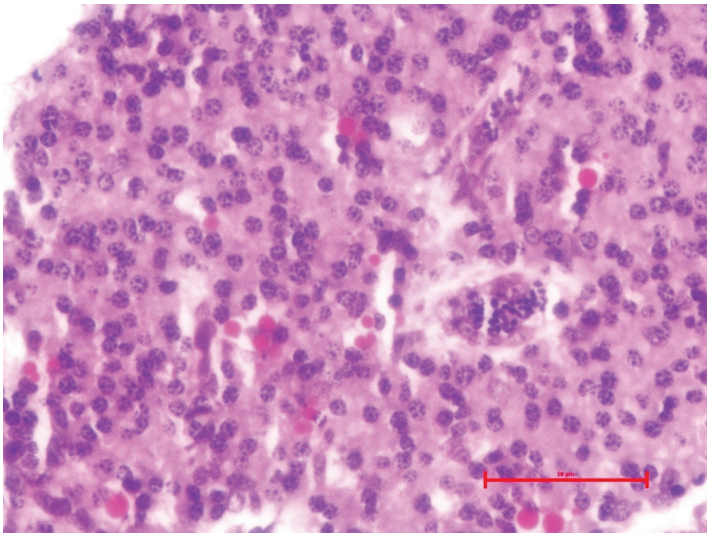

Figure 2. The endocervical polyp contained numerous plasma cells with intracytoplasmic Russell bodies (H&E 40)

Discussion

IIt is widely reported that, for Russell body particles, immunoglobulin accumulation occurs in the endoplasmic reticulum of plasma cells with ribosomes under inflammatory circumstances [19]. They are also known to be associated with some neoplastic conditions, such as lymphomas and multiple myeloma [44].

The clinical and histopathological findings about Russell body cells reported in the literature are summarized in Table 1. Evaluation of these data revealed that the average level for age was 57.73/63.66, and the general age average was 61/19 (Table 1).

We also determined that most of the studies published on Russell body cells investigated the gastrointestinal system (GIS) [13,14,41]. Russell body cells detected in the stomach have been linked to H. pylori infections and the immune system [36]. An overall review of the cases with Russell body gastritis revealed that the majority appear to be associated with H. pylori infection [9,15,18]. This infection damages both superficial and crypto cells due to infiltration of interleukin-1, interleukin-6, interleukin-8, and plasma cells, in addition to the production of cytokines, such as tumor necrosis factors that cause chronic gastritis [7]. Overstimulation of plasma cells by mucosal pathogens can result in a large amount of immunoglobulin [36].

In 1963, Munsick and Janoveski were the first to report Russell body cells in cervicitis [4]. Bacteria and seminal liquid are attributed to the infiltration of active immunological plasma cells of contraceptive substances that can develop in reaction to antigen cells [4,36]. However, neither the cause of plasma cell accumulation nor the lifespan of Russell bodies have been ascertained yet [36].

A study by Stewart and Leake reported that the routine cervical smear test of a 35-year-old female patient showed that her low-grade squamous lesion (SIL) and cervical intraepithelial neoplasia (CIN) were consistent with each other in terms of Russell bodies. Russell bodies have also been determined to be present in high numbers in plasma cells in CIN and cervical stroma. Accumulation of Russell bodies in plasma cells in the cervix is known as Russell body cervicitis [3].

In 2007, Salmo and Farroha reported the results of a cervical biopsy obtained from a 29-year-old woman who had undergone an abortion. This patient was negative for CIN and HPV infection, and her complete blood cell count and serum immunoglobulin levels were normal; also, polymerase chain reaction (PCR) analysis show that her HPV samples were negative [19]. In 2014, Foda et al. analyzed the cervical biopsy samples of a 35-year-old woman with contact bleeding and observed dense infiltration of CD138 positive plasma cells [36]. A histopathological diagnosis of Russell body cervicitis should also be made with the aid of plasmacytoma and malakoplakia [36].

In conclusion, in the present case report we determined that the patient's cervical biopsy showed noticeable Russell body particles with widespread infiltration of the plasma cells. In addition to our case, only three other cases have been reported in the literature published in English. Therefore, further studies are needed to determine the pathogenesis and causes of cervical infiltration. Furthermore, the etiology and significance of this inflammatory process in the cervix still remains to be elucidated.

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