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Short report

Isolation and identification of *Rhizobium radiobacter* from UTI patients in Mosul City

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ABSTRACT

Background: Previously, *Rhizobium radiobacter*; rare gram-negative bacterium was considered a plant pathogen due to its ability to infect the roots of leguminous plants and the formation of Root nodes. However, now, it causes diseases in humans, especially in patients with weak immune systems. **Objective:** The main aim of this research paper is to record the isolation of this genus for the first time in the city of Mosul as an opportunistic pathogen, from patients with urinary tract infections, who have a urinary catheter. **Methods:** Sixty-seven clinical samples were collected from Al-Slam and Ibn Sina General Teaching Hospitals and cultured on the center of the brain heart infusion agar, conventional biochemical tests were performed on them, and then the Vitek 2 system was used to confirm their diagnosis, and tests for sensitivity to antibiotics. **Results:** We obtained two bacterial isolates belonging to this genus and they have shown resistance to several antibiotics and are sensitive to antibiotics (F100, LEV 5 and NOR 30). **Conclusion:** These bacteria are opportunistic and can acquire virulent qualities and antibiotic resistance, so farmers should be sensitized because they are closer to dealing with the soil in terms of wearing gloves and when they feel unwell, not being in the field and visiting the hospital.

Introduction

Rhizobium radiobacter are gram-negative facultative anaerobes, motile peritrichously, non-spore-forming, use dead plants to live on them, are present in the soil, and play an important role in nitrogen fixation and the formation of Root nodes can consume multiple monosaccharides as the sole source of carbon [1]. the thick slim layer that it has because of its ability to consume a large amount of carbohydrates [2].

The first case of human infection with *Rhizobium radiobacter* was in a patient with prosthetic aortic valve endocarditis was reported in 1980[3]

Patients with *Rhizobium radiobacter* have chronic tiring diseases. [4,5]

Usually, infection with this bacterium causes bacteremia. [6,7]

Five species are related to the genus *Rhizobium* (i.e. *R. radiobacter*, *R. vitis*, *R.*

rhizogenes, R. until, and R. rubi) the famous one reported as a human opportunistic pathogen is *Rhizobium radiobacter* [8] recently it's accepted as a new nomenclature for *Agrobacter radiobacter* and *Agrobacter tumefaciens* based on 16sr DNA analysis. [2, 9]

The most clinical sources we can investigate this pathogen from is the presence of foreign plastic devices such as (continuous ambulatory, urinary tract infections, Catheter-related bacteremia, and peritoneal dialysis peritonitis).[10]

This phytopathogenic bacterium is used in water and moist areas like hospital environments and is capable of transient and colonizing the human gastrointestinal tract. the most common types of infection peritonitis, endocarditis, meningitis, urinary tract, and pyogenic infections are much less commonly encountered. [11, 12, 13]

This study aims to isolate this rare bacterium from human UTI infections in Mosul City-Iraq for the first time.

Materials and methods

67 clinical samples were collected from urinary catheter patients lying in the Al-Salam and Ibn Sina General Teaching Hospitals in Mosul City / Iraq for the period from 1-12-2022 to 1-3-2023, all samples underwent culturing on brain heart infusion agar and gram stain and then their biochemical tests were conducted (oxidase, litmus milk, acid from glucose and maltose, Ferric ammonium citrate) and The diagnosis was confirmed using the Vitek 2 system, at the probability of (94 and 99%) the automated system with a gram-negative card, AST tests

Antibiotic susceptibility tests

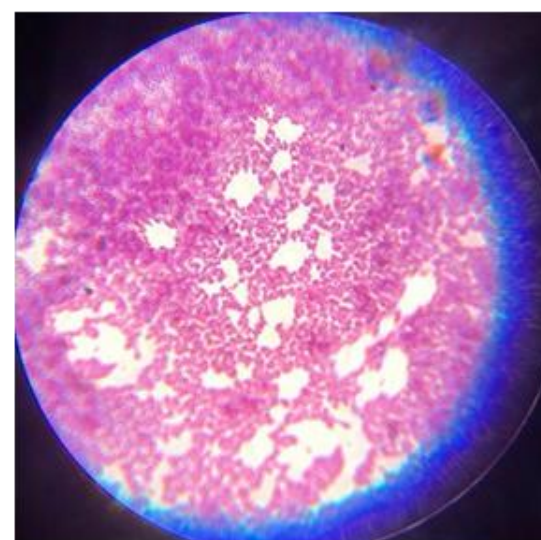
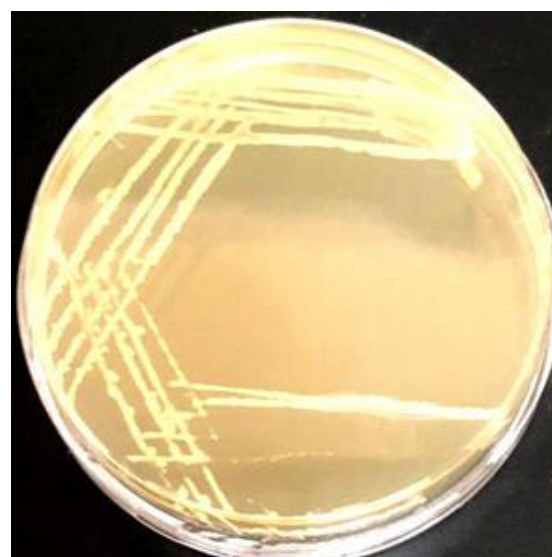
The test was carried out on Muller-Hinton Agar, following the recommendation given by CLSI depending on the Kirby-Bauer disk-diffusion method. The antibiotics used were: Ampicillin/Cloxacillin APX30, Amoxicillin AMC30, Cephalothin KF30, Ciprofloxacin CIP10, Ceftazidim CAZ30, Norfloxacin NOR30, Ceftriaxone CRO10, Aztreonam ATM30, Levofloxacin LEV5 and Nitrofurantoin F100. Zone diameters were measured by an electronic calibrator after 24h of incubation at 37°C and were interpreted according to the CLSI recommendations. [14]

Results

We obtained 2 (2.9%) isolates out of 67 belonging to the *Rhizobium radiobacter* Since it was

positive for biochemical tests (Oxidase, Litmus Milk, Acid from Glucose, and Maltose, Ferric ammonium citrate) and negative to gram stain fig.1.

Figure 1. Up: *Rhizobium radiobacter* on BHIA agar, down: Gram stain showed that this bacterium was gram negative bacterium .



Then the diagnosis was confirmed using the Vitek 2 device and we got a high percentage of 94 and 99% as shown in figure 2.

Figure 2. Identification of *Rhizobium radiobacter* by VITEK-2 system.

bioMérieux Customer: DR. RADHAWAN ALJAMMAS- LAB
Microbiology Chart Report
Printed Mar 24, 2023: 13:40 CDT

Patient Name: Enas Munir Baheth 51...
Location: LAB ID: 147
Organism Quantity:
Selected Organism: *Rhizobium radiobacter*

Source: swab
Collected: _____

Comments: _____

Identification Information:
Analyte Time: 3.85 hours
Status: Final
Selected Organism: *Rhizobium radiobacter*
Bionumber: 2301734850120000

IO Analysis Messages: _____

Biochemical Details

2	ADPA	3	ADO	4	PyA	5	IAEL	6	ICEL	7	ICEL	8	ICEL	9	ICEL	10	ICEL	11	ICEL	12	ICEL	13	ICEL	14	ICEL	15	ICEL	16	ICEL	17	ICEL	18	ICEL	19	ICEL	20	ICEL	21	ICEL	22	ICEL	23	ICEL	24	ICEL	25	ICEL	26	ICEL	27	ICEL	28	ICEL	29	ICEL	30	ICEL	31	ICEL	32	ICEL	33	ICEL	34	ICEL	35	ICEL	36	ICEL	37	ICEL	38	ICEL	39	ICEL	40	ICEL	41	ICEL	42	ICEL	43	ICEL	44	ICEL	45	ICEL	46	ICEL	47	ICEL	48	ICEL	49	ICEL	50	ICEL	51	ICEL	52	ICEL	53	ICEL	54	ICEL	55	ICEL	56	ICEL	57	ICEL	58	ICEL	59	ICEL	60	ICEL	61	ICEL	62	ICEL	63	ICEL	64	ICEL	65	ICEL	66	ICEL	67	ICEL	68	ICEL	69	ICEL	70	ICEL	71	ICEL	72	ICEL	73	ICEL	74	ICEL	75	ICEL	76	ICEL	77	ICEL	78	ICEL	79	ICEL	80	ICEL	81	ICEL	82	ICEL	83	ICEL	84	ICEL	85	ICEL	86	ICEL	87	ICEL	88	ICEL	89	ICEL	90	ICEL	91	ICEL	92	ICEL	93	ICEL	94	ICEL	95	ICEL	96	ICEL	97	ICEL	98	ICEL	99	ICEL	100	ICEL	101	ICEL	102	ICEL	103	ICEL	104	ICEL	105	ICEL	106	ICEL	107	ICEL	108	ICEL	109	ICEL	110	ICEL	111	ICEL	112	ICEL	113	ICEL	114	ICEL	115	ICEL	116	ICEL	117	ICEL	118	ICEL	119	ICEL	120	ICEL	121	ICEL	122	ICEL	123	ICEL	124	ICEL	125	ICEL	126	ICEL	127	ICEL	128	ICEL	129	ICEL	130	ICEL	131	ICEL	132	ICEL	133	ICEL	134	ICEL	135	ICEL	136	ICEL	137	ICEL	138	ICEL	139	ICEL	140	ICEL	141	ICEL	142	ICEL	143	ICEL	144	ICEL	145	ICEL	146	ICEL	147	ICEL	148	ICEL	149	ICEL	150	ICEL	151	ICEL	152	ICEL	153	ICEL	154	ICEL	155	ICEL	156	ICEL	157	ICEL	158	ICEL	159	ICEL	160	ICEL	161	ICEL	162	ICEL	163	ICEL	164	ICEL	165	ICEL	166	ICEL	167	ICEL	168	ICEL	169	ICEL	170	ICEL	171	ICEL	172	ICEL	173	ICEL	174	ICEL	175	ICEL	176	ICEL	177	ICEL	178	ICEL	179	ICEL	180	ICEL	181	ICEL	182	ICEL	183	ICEL	184	ICEL	185	ICEL	186	ICEL	187	ICEL	188	ICEL	189	ICEL	190	ICEL	191	ICEL	192	ICEL	193	ICEL	194	ICEL	195	ICEL	196	ICEL	197	ICEL	198	ICEL	199	ICEL	200	ICEL	201	ICEL	202	ICEL	203	ICEL	204	ICEL	205	ICEL	206	ICEL	207	ICEL	208	ICEL	209	ICEL	210	ICEL	211	ICEL	212	ICEL	213	ICEL	214	ICEL	215	ICEL	216	ICEL	217	ICEL	218	ICEL	219	ICEL	220	ICEL	221	ICEL	222	ICEL	223	ICEL	224	ICEL	225	ICEL	226	ICEL	227	ICEL	228	ICEL	229	ICEL	230	ICEL	231	ICEL	232	ICEL	233	ICEL	234	ICEL	235	ICEL	236	ICEL	237	ICEL	238	ICEL	239	ICEL	240	ICEL	241	ICEL	242	ICEL	243	ICEL	244	ICEL	245	ICEL	246	ICEL	247	ICEL	248	ICEL	249	ICEL	250	ICEL	251	ICEL	252	ICEL	253	ICEL	254	ICEL	255	ICEL	256	ICEL	257	ICEL	258	ICEL	259	ICEL	260	ICEL	261	ICEL	262	ICEL	263	ICEL	264	ICEL	265	ICEL	266	ICEL	267	ICEL	268	ICEL	269	ICEL	270	ICEL	271	ICEL	272	ICEL	273	ICEL	274	ICEL	275	ICEL	276	ICEL	277	ICEL	278	ICEL	279	ICEL	280	ICEL	281	ICEL	282	ICEL	283	ICEL	284	ICEL	285	ICEL	286	ICEL	287	ICEL	288	ICEL	289	ICEL	290	ICEL	291	ICEL	292	ICEL	293	ICEL	294	ICEL	295	ICEL	296	ICEL	297	ICEL	298	ICEL	299	ICEL	300	ICEL	301	ICEL	302	ICEL	303	ICEL	304	ICEL	305	ICEL	306	ICEL	307	ICEL	308	ICEL	309	ICEL	310	ICEL	311	ICEL	312	ICEL	313	ICEL	314	ICEL	315	ICEL	316	ICEL	317	ICEL	318	ICEL	319	ICEL	320	ICEL	321	ICEL	322	ICEL	323	ICEL	324	ICEL	325	ICEL	326	ICEL	327	ICEL	328	ICEL	329	ICEL	330	ICEL	331	ICEL	332	ICEL	333	ICEL	334	ICEL	335	ICEL	336	ICEL	337	ICEL	338	ICEL	339	ICEL	340	ICEL	341	ICEL	342	ICEL	343	ICEL	344	ICEL	345	ICEL	346	ICEL	347	ICEL	348	ICEL	349	ICEL	350	ICEL	351	ICEL	352	ICEL	353	ICEL	354	ICEL	355	ICEL	356	ICEL	357	ICEL	358	ICEL	359	ICEL	360	ICEL	361	ICEL	362	ICEL	363	ICEL	364	ICEL	365	ICEL	366	ICEL	367	ICEL	368	ICEL	369	ICEL	370	ICEL	371	ICEL	372	ICEL	373	ICEL	374	ICEL	375	ICEL	376	ICEL	377	ICEL	378	ICEL	379	ICEL	380	ICEL	381	ICEL	382	ICEL	383	ICEL	384	ICEL	385	ICEL	386	ICEL	387	ICEL	388	ICEL	389	ICEL	390	ICEL	391	ICEL	392	ICEL	393	ICEL	394	ICEL	395	ICEL	396	ICEL	397	ICEL	398	ICEL	399	ICEL	400	ICEL	401	ICEL	402	ICEL	403	ICEL	404	ICEL	405	ICEL	406	ICEL	407	ICEL	408	ICEL	409	ICEL	410	ICEL	411	ICEL	412	ICEL	413	ICEL	414	ICEL	415	ICEL	416	ICEL	417	ICEL	418	ICEL	419	ICEL	420	ICEL	421	ICEL	422	ICEL	423	ICEL	424	ICEL	425	ICEL	426	ICEL	427	ICEL	428	ICEL	429	ICEL	430	ICEL	431	ICEL	432	ICEL	433	ICEL	434	ICEL	435	ICEL	436	ICEL	437	ICEL	438	ICEL	439	ICEL	440	ICEL	441	ICEL	442	ICEL	443	ICEL	444	ICEL	445	ICEL	446	ICEL	447	ICEL	448	ICEL	449	ICEL	450	ICEL	451	ICEL	452	ICEL	453	ICEL	454	ICEL	455	ICEL	456	ICEL	457	ICEL	458	ICEL	459	ICEL	460	ICEL	461	ICEL	462	ICEL	463	ICEL	464	ICEL	465	ICEL	466	ICEL	467	ICEL	468	ICEL	469	ICEL	470	ICEL	471	ICEL	472	ICEL	473	ICEL	474	ICEL	475	ICEL	476	ICEL	477	ICEL	478	ICEL	479	ICEL	480	ICEL	481	ICEL	482	ICEL	483	ICEL	484	ICEL	485	ICEL	486	ICEL	487	ICEL	488	ICEL	489	ICEL	490	ICEL	491	ICEL	492	ICEL	493	ICEL	494	ICEL	495	ICEL	496	ICEL	497	ICEL	498	ICEL	499	ICEL	500	ICEL	501	ICEL	502	ICEL	503	ICEL	504	ICEL	505	ICEL	506	ICEL	507	ICEL	508	ICEL	509	ICEL	510	ICEL	511	ICEL	512	ICEL	513	ICEL	514	ICEL	515	ICEL	516	ICEL	517	ICEL	518	ICEL	519	ICEL	520	ICEL	521	ICEL	522	ICEL	523	ICEL	524	ICEL	525	ICEL	526	ICEL	527	ICEL	528	ICEL	529	ICEL	530	ICEL	531	ICEL	532	ICEL	533	ICEL	534	ICEL	535	ICEL	536	ICEL	537	ICEL	538	ICEL	539	ICEL	540	ICEL	541	ICEL	542	ICEL	543	ICEL	544	ICEL	545	ICEL	546	ICEL	547	ICEL	548	ICEL	549	ICEL	550	ICEL	551	ICEL	552	ICEL	553	ICEL	554	ICEL	555	ICEL	556	ICEL	557	ICEL	558	ICEL	559	ICEL	560	ICEL	561	ICEL	562	ICEL	563	ICEL	564	ICEL	565	ICEL	566	ICEL	567	ICEL	568	ICEL	569	I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Conclusion

As shown in these two cases this pathogen is an opportunistic pathogen. It is associated with patients who carry catheters and suffer from chronic diseases, and immunocompromised patients.

Conflict of Interest

The authors declare that there is no conflict of interest.

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Data availability

All data generated or analyzed during this study are included in this published article.

Authors' contribution

Both authors made significant contributions to the work presented, including study design, data collection, analysis, and interpretation. They also contributed to the article's writing, revising, or critical evaluation, gave final approval for the version to be published.

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References

- 1- Roy S, Basuli D, Rahman EU, Adapa S, Reddy SN. Rhizobium radiobacter -induced peritonitis: A case report and literature analysis. *Journal of Medical Cases*. 2022 Sep;13(9):471.
<https://doi.org/10.14740%2Fjmc3999>
- 2- Chen CY, Hansen KS, Hansen LK. Rhizobium radiobacter as an opportunistic pathogen in central venous catheter-associated bloodstream infection: case report and review. *Journal of Hospital Infection*. 2008 Mar;68(3):203-7.
<https://doi.org/10.1016/j.jhin.2007.11.021>
- 3- Plotkin GR. Agrobacterium radiobacter prosthetic valve endocarditis. *Annals of Internal Medicine* 1980 Dec ;93(6): 840-840.
- 4- Alós JI, de Rafael L, Gonzalez-Palacios R., Aguiar JM, Allona A, Baquero F. Urinary tract infection probably caused by Agrobacterium radiobacter. *European Journal of Clinical Microbiology* 1985 4(6): 596-597.
- 5- Dunne Jr WM, Tillman LL, Murray JC. Recovery of a strain of Agrobacterium radiobacter with a mucoid phenotype from an immunocompromised child with bacteremia. *Journal of Clinical Microbiology* 1993 Sep; 31(9): 2541-2543.
- 6- Rodby RA, Glick EJ. Agrobacterium radiobacter peritonitis in two patients maintained on chronic peritoneal dialysis. *American Journal of kidney diseases* 1991 Sep; 18(3): 402-405.
- 8- Potvliege C., Vanhuynegem L., Hansen W. Catheter infection caused by an unusual pathogen, Agrobacterium radiobacter. *Journal of Clinical Microbiology* 1989 27(9):2120-2122.
- 9- Lai CC, Teng LJ, Hsueh PR, Yuan A, Tsai KC, Tang JL, et al. Clinical and microbiological characteristics of Rhizobium radiobacter infections. *Clinical infectious diseases*. 2004 Jan;38(1):149-153.
<https://doi.org/10.1086/380463>
- 10- Christakis GB, Alexaki P, Alivizatos AS, Chalkiopoulou I, Athanasiou AE, and Zarkadis IK. Primary bacteraemia caused by Rhizobium radiobacter in a patient with solid tumours. *Journal of medical microbiology*. 2006 Oct;55(10):1453-1456.
<https://doi.org/10.1099/jmm.0.46411-0>
- 11- Patel W, Aboud M, Alnafisah H, Razak A. Rhizobium radiobacter sepsis in a neonate: A case report and literature review. *Journal of Neonatology*. 2022 Sep;36(3):240-243.
- 12- Tiwari S, Beriha SS. Primary bacteremia caused by Rhizobium radiobacter in neonate: A rare case report. *Journal of Clinical and Diagnostic Research* 2015 Oct;9(10).
<https://doi.org/10.7860%2FJCDR%2F2015%2F15101.6598>
- 13- Boceska BK, Osmani D, Basovska BP, Petreska VK, Trajkova ZA, Jovanovska A et al. Rhizobium radiobacter bacteremia in a two-year-old patient with an acute lymphoblastic leukemia: A case report. *Archives of Public Health*. 2020 Dec 15;12(3):91-4.
- 14- Clinical and Laboratory Standards Institute CLSI. Performance Standards for Antimicrobial Susceptibility Testing: Twenty-Eight Informational Supplement. M100, 2021, 38(3): 186-190

- 15- Sawhney S., Naab T., Oneal P. *Rhizobium radiobacter* infection in a 27-year-old African American woman with Munchausen syndrome. *Laboratory medicine* 2016 April; 47(3): e32-e34. DOI: 10.1093/labmed/lmw019.
- 16- Mantadakis E, Kondi A, Christidou A Kalmanti M. *Agrobacterium radiobacter* bacteremia in a child with acute lymphoblastic leukemia. *World Journal of Pediatrics*. 2010 Feb; 6:181-84
- 17- Wang DL, Zhao LD, Li LJ, Zhou MJ. Septic shock caused by *Rhizobium radiobacter* in an elderly woman: A case report. *Medicine* 2019 Dec; 98(49), e18267.

Abdulmageed I, Sulaiman A. Isolation and identification of *Rhizobium radiobacter* From UTI patients in Mosul City. *Microbes Infect Dis* 2025; 6(4): 6807-6811.