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Original Article

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Outcome of Percutaneous Ultrasound Guided Aspiration versus Open Surgical Drainage of Psoas Muscle Abscess

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Author`s Contribution

[1,3]Substantial contributions to the conception or design of the work [2]Final approval of the version to be published, Reviewed the study
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ABSTRACT

Objective: To compare the outcome of percutaneous ultrasound guided aspiration V/S open surgical drainage for psoas muscle abscess.

Methodology: This comparative study was conducted in department of general surgery at Liaquat medical university hospital Hyderabad/Jamshoro, from June 2017 to November 2017. Diagnosed Patients of psoas muscle abscess size more than 5cm, between 18 to 60 years of age and either of gender were included. Patients were randomly divided into two groups, A and B by lottery method, patients in group A abscess were aspirated by percutaneous ultrasound guided aspiration and patients in group B was underwent open surgical drainage, all the data were entered in the pre designed proforma and analyzed into SPSS V:16.0

Results: A total of 58 patients of Psoas muscle abscess were selected, the mean age of study subjects of group A was 38.5+10.5 and group B was 36.5+12.7 (p-673). Early post-operative pain relief was assessed among patients of group A as compared to group B. As per outcome resolution of abscess cavity was significantly high among patients of group B (p-0.004), while post-operative Hospital stay was significantly lower in group A (p-0.002).

Conclusion: Both techniques have their own benefits like percutaneous aspiration has shorter duration of hospital stay while in complete resolution of abscess cavity was found in open surgical drainage group of patients.

Keywords: Psoas, Abscess, percutaneous, aspiration, open surgical drainage

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Introduction

Psoas abscess is the puss collection in the compartment of iliopsoas muscle,[1] can be classified as primary developing through a hematogenous or lymphatic route and secondary spreading from adjacent structure. Secondary psoas abscesses are mostly caused from bone, gastrointestinal tract, and urinary tract.[2] The clinical features of psoas abscess are not specific and have an insidious onset, resulting in diagnostic and treatment delays. Delay in drainage of psoas abscess or retro peritoneal abscess could cause avascular necrosis of the femoral head, osteomyelitis, cellulitis of the thigh, and septic arthritis of the hip.[3,4] Currently, primary psoas abscesses are rare, and most cases of psoas abscesses are secondary.[5-7] Attributing to the particular anatomy of psoas lie in close proximity to abdominal organs and pelvic structures. Hence, infections in these organs can spread to the psoas muscle. In recent study, Crohn's disease is deemed to be the most common etiology of secondary psoas abscess in overseas countries.[2,7] Whereas, the most common etiology of secondary psoas abscess is orthopedic infections in Asia, such as pyogenic spondylodiscitis.[5,7] The most common organism of psoas abscess is S. aureus, but Escherichia coli is the predominant etiological organism of gastrointestinal tract.[2,7] However, Mycobacterium tuberculosis is considered the important cause of psoas abscess in developing countries, especially

tuberculosis of spine.[8,9] The clinical presentation of psoas abscess is not specific and often variable. The classical triad (fever, back pain, and lump) is present in only 30% of the patients with psoas abscess. Other symptoms like vague abdominal pain, malaise, nausea, and weight loss should also be considered. Treatment of a psoas abscess is based on early use of appropriate antibiotics with drainage either percutaneously or surgically.[2,7] Although drainage of psoas abscess is still recommended. As delay in drainage could result in prolonged sepsis and associated high morbidity and mortality.[3] Different studies suggested different treatments like as antibiotics, percutaneous ultrasound guided aspiration and open surgical drainage for psoas muscle abscess.[10] For the treatment of psoas abscess due to tuberculosis of spine, posterior approach to percutaneous drainage should be considered as it results in a good clinical outcome.[11] Therefore purpose of this study is to choice the suitable treatment out of percutaneous ultrasound guided aspiration and open surgical drainage for psoas muscle abscess at Liaquat University of medical and health science Jamshoro.

Methodology

This comparative study was conducted in department of general surgery at Liaquat Medical University Hospital Hyderabad/Jamshoro. This study was performed after the approval of ethical committee of Liaquat university medical hospital Hyderabad/Jamshoro, during 6 months after approval of synopsis. Subjects were selected through outpatient department (OPD) of general Surgery of Liaquat Medical University Hospital Hyderabad / Jamshoro. Non-probability purposive sampling method was used for this study. The sample calculation was done using the Raosoft software for "Sample size calculation" by using the proportion (30%).[11] By taking least proportion with level of significance 95% and power of test 5%, the sample size of my study was 58 (29) in each group. Age between 18 to 60 years, both genders, size of abscess more than 5cm and patients with diagnosed psoas muscle abscess were included in this study. Patients having abscess size < 5cm, cases having severe co-morbidities as uncontrolled diabetes and hypertension, chronic hepatitis B and C virus and those who were not willing to participate in the study were excluded. Brief history of duration of illness and examination including ultrasound was carried out and written consent was taken. All the necessary laboratory investigations including radiology were carried out. Patients were randomly divided into two groups, A and B by odd and even method, patients in group A abscess were aspirated by percutaneous ultrasound guided aspiration and patients in group B were underwent open surgical drainage for psoas muscle abscess under local anaesthesia. All the data regarding age, sex, clinical presentation, duration of abscess, site of abscess and postoperative complications were documented. Prophylactic antibiotic was given preoperatively. All the data were entered in the predesigned proforma. All the data was entered into SPSS 16.0 version and was analyzed by using the same software. The quantitative data like age, duration of abscess was presented in form of mean ± S.D. Simple frequency and percentage were computed for the gender, site of abscess and complications. Chi-square test was applied and P-value <0.05 was considered as significant.

Results

Total fifty-eight cases having Psoas muscle abscess were studied, and the average age of study subjects of group A was 38.5±10.5 and group B was 36.5±12.7 (p-673). There were 72.4% males 21 in both groups and 27.5% females 8 in both groups in our study. Out of all 20(34.5%) patients had right side abscess in group A and 17(29.3%) in group B, rest had left side abscess among both groups (p-0.412) as shown in table.1

Table I: Descriptive statistics of age and gender among both groups (n=58)

Variables		Statistics		p-value
		Group A	Group B	
Age (years)	Mean±SD	38.5±10.5	36.5±12.7	0.673
Gender	Males	21(36.2)	21(36.2)	1.000
	Females	8 (13.7)	8 (13.7)	
Site of abscess	Right	20(34.5%)	17(29.3%)	0.412
	Left	09(15.5%)	12(20.7%)	

Early post-operative pain relief was assessed among patients of group A as compared to group B as showed in table. I.

Table II: Descriptive statistics of pain relief according to study groups (n=58)

Post procedure time	Relief of pain	Statistics		p-value
		Group A	Group B	
1st post-operative day	Yes	20(68.9)	15(51.7)	0.037
	No	09(31.0)	14(48.2)	
2nd post-operative day	Yes	25(86.2)	20(68.9)	0.001
	No	04(13.7)	09(31.0)	
3rd post-operative day	Yes	28(96.5)	26(89.6)	0.083
	No	01(3.4)	03(10.3)	

As per outcome resolution of abscess cavity was significantly high among patients of group B (p-0.004), while post-operative Hospital stay was significantly lower in group A (p-0.002). Table III

Table III: Outcome among both groups (n=58)

Variables		Statistics		p-value
		Group A	Group B	
Resolution of abscess cavity	Yes	19 (65.5)	26 (89.6)	0.004
	No	10 (34.4)	03 (10.3)	
Hospital stay	≤3 days	28 (96.5)	15 (51.7)	0.002
	>3 days	01 (3.4)	14 (48.2)	

Discussion

The psoas abscess, may occurred with the non-specific presentation, comprising low back, subacute hip or the groin pain. In this study mean age of the cases was 38.5±12.5. Results were comparable with A study from India by Dave BR et al[3] the mean age was 36.5±12.7 (range 18-63 years). Whereas Pombo F et al[7] has given mean age 35 years. Elbadrawi AM et al[8] 32 (range 21 to 55), Aboobakar R, et al[5] 32 years. Ye F. et al[11] 38.5±8.7 years (age range from 20 to63 years. In current study there were 72.4% males and 27.5% females in each group. Results were comparable with A study from India by Dave BR et al[3] who has reported in his study that there were 21(72.4%) males and 8 (27.5%) females. Whereas Wong et al[1] has reported 27(64.2%) males and 15 (35.7%) females. Yadav RP et al[10] 22 (61.1%) males and 14 (38.9%) females. Another study from turkey by Tarhan H et al[6] has reported 6 (40%) patients' women and 9 (60%) men. Alvi AR et al[12] has giving in his study 4 (66.6%) male and 2 (33.3%) female, whereas Tabrizian P et al13 has reported 32 (52.4%) men and 29 (47.5%) women. Baloch I et al[13] found average age of the cases 39.25±9.8 and males were 69.3%.

In this study out of all 20(34.5%) patients had right side abscess in group A and 17(29.3%) in group B, rest had left side abscess among both groups. Tabrizian P et al[14] reporting in his study the mean size of Illiopsoas abscess was 6cm. Most patients 87% were initially seen with a unilateral abscess. MultipleIlliopsoas abscess were found in 25% (15 of 61). Dave B R et al[3] reported that in six cases abscess was in right side, five cases had left side and 18 cases had bilateral. Tarhan H et al[6] reported that the Psoas abscess was unilateral in all patients. Right side was affected in 12(80%) patients, while 3 (20%) patients had left side abscess.

In this study all patients were asked about perception of pain on post-operative period, statistically there were no significant difference (P- 0.123) in both group in all post-operative follow up periods. Same results were seen in a study by Wong et al[1] reporting that there is no significant difference with (p-0.233) in pain relief in both percutaneous aspiration and surgical drainage. Another study by Y.J Kim et al[2] reporting there is no significant difference in pain relief in both percutaneous aspiration and surgical drainage (p-0.233). Aboobakar R, et al[5] and Alvi AR et al[12] also reporting same result in their studies that there were no statistically significant difference in perception of post-operative pain with p-value (1.123 and 0.234) respectively.

In this study complete resolution of abscess cavity in single intervention occurred in 19 (65.5%) patients in percutaneous aspiration group [A] and 22 (75.8) patients in open surgical drainage group [B]. 2nd attempt of aspiration required in 34.4% patients in percutaneous aspiration group [A] and 03 (10.3) patients in open surgical drainage group [B] statistically Significance level p-0.004. A study by Wong et al[15] reporting that complete resolution of abscess cavity was seen in patients that go for open surgical drainage than percutaneous aspiration group with p- value 0.003. However, Y.J Kim et al[2] also reported statistically significant difference with (p- value 0.002) complete resolution of abscess cavity was seen in open surgical drainage than percutaneous ultrasound guided aspiration group. Local studies like Aboobakar R, et al[5] and Alvi AR et al[12] reported that complete resolution of abscess cavity was seen in incision and drainage than percutaneous ultrasound guided aspiration with ($p < 0.05$).

In this study post-operative hospital stay was significantly less < 3 days seen in 96.5% patients in percutaneous aspiration group [A] than open surgical drainage group [B] seen in 51.7% patients. While hospital stay >3 days was seen in only one patient in percutaneous aspiration group [A] and 14 (48.2) patients in open surgical drainage group [B] with Significance level; p-0.002. A study by Wong et al[15] found that patients with surgical drainage had longer Hospital stays than percutaneous aspiration group (mean, 62 vs 34 days; P=0.002). Another study by Y.J Kim et al[2] found statistically significant difference in duration of hospital stay open surgical drainage had longer duration of hospital stay than PUA with (p- value 0.002). Local studies like Aboobakar R, et al 5 and Alvi AR et al[12] stated that longer duration of hospital stay in open surgical drainage group than PUA with statistically significant difference (p- value 0.003 and 0.002) in their studies. On other hand Akhan O et al[16] observed that the percutaneous drainage is the reliable treatment option for the abscess of retroperitoneal due to elimination of need for general anesthesia, better toleration and less morbidities inContact to surgical methods.

Conclusion

From above results it is concluded that both techniques have their own benefits like percutaneous ultrasound guided aspiration has shorter duration of hospital stay while in terms of complete resolution of abscess cavity open surgical drainage has good results and there was no significant difference in relief of pain in both techniques. It is also found that psoas muscle abscess commonly present in males and right side. More large-scale studies are suggested on this subject.

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