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LUMBER DISCITIS;
PREVALENCE AND MANAGEMENT AFTER LUMBER DISC SURGERY

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ABSTRACT... Objectives: To study the occurrence of discitis after lumber disc surgery and its management. **Study Design:** Observational study. **Setting:** Department of Neurosurgery QAMC/ BVH Bahawalpur. **Period:** April 2006 to May 2009. **Patients and Methods:** This study includes 400 patients who underwent standard laminectomy procedure for disc excision. Patients presenting with backache and leg pain were thoroughly investigated. For the confirmation of herniated disc MRI or lumber route myelography were performed. All patients underwent either fenestration, hemilaminectomy or complete laminectomy for disc excision. Patients were followed for two weeks to three years after surgery. The diagnosis of discitis was on clinical grounds but this condition was confirmed by heamatological examination i.e. ESR, complete blood count, C-reactive protein and radiological examination i.e. MRI, CT and plain X-rays. **Results:** Eighteen (4.5%) patients out of four hundred patients developed disitis after surgery. Initially all patients were managed conservatively i-e. with complete bed rest and antibiotics .Fifteen (83.33%) patients responded well to this treatment but three (16.67%) patients did not improve and were subjected to surgery. **Conclusions:** Discitis after lumber disc surgery is rare. Discitis should be considered in any patient who develops severe backache,leg pain and muscles spasms after one to four weeks of lumber disc surgery especially accompanied with fever , raised ESR and elevated C-reactive proteins..A definitive diagnosis is essential for appropriate therapy of discitis.

Key words: Discitis, Laminectomy, Lumber disc surgery.

INTRODUCTION

Discitis is an inflammation of the vertebral end plates related to infection. Infection of the disc space must be considered with vertebral osteomyelitis, as these conditions are always present together and share much of the same pathophysiology, symptoms and treatment. Although discitis and related vertebral osteomyelitis are uncommon conditions, they are often the cause of debilitating neurologic illness. Unfortunately, morbidity can be exacerbated by a delay in diagnosis and treatment. The lumber region is most commonly affected[1,2,3,4,5]. The characteristic symptoms were severe back pain with muscle spasm and fever. The laboratory findings were elevated ESR, raised white cell count and increased C-Reactive proteins. In bacterial culture, staphylococcus aureus was isolated in one case .Typical radiological findings were narrowing of the disc space and end plate resorption[6]. In its early stages, discitis usually responds favourably to bed rest and antibiotics treatment. If conservative treatment for more than 6 weeks fails to provide relief or if patient deteriorates secondary to paraspinal abscess formation, sepsis, spinal deformities due to destruction of the end plates or progressive neurological impairment , operative treatment should be considered[7,8].

MATERIAL AND METHODS

Four hundred patients were selected for lumber disc surgery from a large group of patients who presented with backache and leg pain from April 2006 to May 2009.A detailed history was taken from each patient and a thorough physical and systemic examination was performed. Routine blood and urine examination were done. ECG, x-ray chest, blood sugar and serum electrolytes were performed in selected patients above 40 years of age. For the confirmation of herniated disc diagnosis , MRI or lumber route myelography were performed. The following were the selection criteria for surgery.

1. Cauda equina syndrome.

In these rare cases patients have severe pain and disability, numbness of buttocks and soles, paraparesis and incontinence of bladder and bowel. These patients were operated upon as an emergency

2. Progressive neurologic loss

Patients having loss of muscle power and impaired feeling in the legs.

3. Severe leg pain

All those patients who had severe pain in spite of adequate bed rest and analgesic treatment underwent surgery for disc excision. fenestration, hemilaminectomy or complete laminectomy. Most of patients were mobile on second postoperative day. All these patients were asked to come for follow up after 2 weeks. After 8 weeks they were educated to avoid postures and activities which can lead to future degenerative problems and also taught exercises to improve spinal musculature .

RESULTS

In this study out of four hundred patients two hundred ninty (72.5%) were male and one hundred ten (27.5%) were female, Table I. The youngest patient was 14 years old and the oldest was 86 year old. The majority of the patients presented in 3rd and fourth decade of life. Table II. Two hundred twenty(55%) had disc lesion at L4-5,one hundred (25%) had disc lesion at L 5-S1,seventy (17.5%) had disc lesion at L3-4 and ten patients had disc lesion at other levels .Table III.

Table-I. Sex distribution

Sex	No. of patients	%age
Male	290	72.5
Female	110	27.5
Total	400	100

Table-II. Age distribution

Age of patient in years	No. of patients	%age
14-20	3	0.75
21-30	40	10.00
31-40	155	38.75
41-50	100	25.00
51-60	60	15.00
61-70	35	8.75
71-80	6	1.50
81-90	1	0.25
Total	400	100

Table-III. Level of disic lesion

Disc lesion level	No. of patients	%age
L4-5	220	55.0
L5-S1	100	25.0
L3-4	70	17.5
Other level	10	2.5
Total	400	100

Out of four hundred patients 17 (4.25%) patients had dural tears during surgery. In all these patients dura was repaired with 4/0 silk and fibrin glue was used to seal the defect .Wound infection was present in twenty five(6.25%). Twenty (5%) were operated for recurrent disc. Two(0.5%) patients had skin burns due to diathermy. Twelve(3%) patients complained of increase weakness of leg after surgery (with one case having complete foot drop) and thirty seven (9.25%)patients complained of increased numbness and paresthesia after surgery. Eighteen (4.5%) patients developed discitis during the follow up period .It was observed that the rate of discitis was high in patients with recurrent lumber disc surgery and also in those patients where curette was used. Table IV.

Table-IV. Complications

Complication	No. of patients	%age
Dural tear	17	4.25
Wound infection	25	6.25
Recurrent disc	20	5.00
Increased weakness of leg	12	3.00
Increased numbness and paresthesia	37	9.25
Dithermy burn	2	0.50
Discitis	18	4.50

Eleven (61.11%) patients presented within 2 weeks, seven (38.89%) patients at 2 and 4 weeks. The characteristics symptoms were severe back pain, muscle spasm. There was local tenderness on the

Table-V. Investigations in patients of discitis (total 18)		
Investigation	**No. of patients**	**%age**
Increased ESR	15	83.33
Increased WBC	8	44.44
Increased C-reactive proteins	14	77.78
Positive x-ray findings	7	38.89
Positive MRI findings	17	94.44

affected area. ESR was elevated in 15(83.33 %) patients and elevated white cell count in 8(44.44%) of patients. CRP was elevated in 14(77.78%)of patients . Narrowing of disc space and end plate resorption was present in seven (38.89%) patients. CT scan was done in one patient ,there was erosion of vertebral end plates and paravertebral fluid collection (abscess).At the time of diagnosis signs of florid inflammation (decrease signal on T1 and increase signal on T2 were seen in seventeen (94.44%) MRI scans. All eighteen patients were advised complete bed rest, and put on analgesics , oral and IV antibiotics ,the most common drugs used were fucidin (500mg/8hourly orally), cloxacillin (500mg/6 hourly orally) and ceftriaxone 2 gm IV od . Fifteen (83.33%)out of 18 patients improved in six weeks time with some backache, slightly muscle spasm and mild residual neurological deficit but treatment was continued for more than 12 weeks. Three patients(16.67%) did not respond to this conservative treatment and were treated with posterior interbody fusion and transpedicular. Culture and sensitivity was done in two patients, in one staphylococcus aureus was grown and in the other patient report was no growth.

DISCUSSION

Discitis after spinal disc surgery is considered to be a rare complication. Eighteen patients developed discitis during the study period of three years (6/year) .In a review of literature by Sapio Montgomerie ,two cases/year were diagnosed in a tertiary care hospital. Kapeller et al decribed 41 cases with in 7 years in a district general hospital giving an incidence rate of 1/100000[9].The higher detection rate in our study may be due to excess use of curette and not properly covered microscopea. Zink PM et al in their study observed that discitis is a well known complication with frequency 0.1 to3% . According to the authors etiological factors are combination of the operated segment instability, damage to the upper and lower end plates due to disc space curettage and transmission of germs[10].This has good relation to the results of our study.

Discitis was identified in 8 male 10 female patients during the study period. Age range was 40 to 70 years. Out of these 18 patients 6 were obese ,4 were of old age ,4 diabetics ,2 having degenerative spinal disease and 1 was hepatitis B positive .The rate of discitis was high in patients of recurrent disc surgery and in those in which curette and microscope were used .All the above risk factors increased the incidence of discitis. Our study confirmed the reports of others[11].

In our study the characteristic symptoms were severe back pain ,muscle spasm and increased temperature.Frank AM et al in their study found the main symptom is increasing low back pain, with difficulty in forward flexion of the body with a raised ESR. This correlates to our study.

In our study 15 patients had increased ESR (between 50 tol00 mm/hour) white cell count was raised in 8 (44.44%)patients and C-reactive protein was elevated in 14 (77.78%) patients. Similar results are reported by Fouquet B et al. and Kapp and Jonsson B[12,13,14]. Bircher MD et al in their study concluded that if the ESR is routinely measured preoperatively and at 2 weeks postoperatively this condition should not be missed[15]. Imae S et al in their study concluded that low back pain gradually receded along with ESR and C-reactive protein[16]. In one study it was concluded that CRP is possibly the most sensitive indicator of postoperative infection[12,17].

In our study mildly elevated white cell count was present in 8 (44.44 %) patients. In one study it was concluded that mildly elevated white cell count is a unreliable parameter in isolation[18].

Signs of florid inflammation were present in 17 (94.44%) out of 12 MRI scans. Wirtz DC et al were of the view that at the time of diagnosis signs of florid inflammation were

seen in 60 % x –ray ,93% CT and all MRI scans. This has good co- relation to results of our study[19].In an other study Frank AM et al made the final conclusion to their study that MRI is proved to be the most sensitive and reliable investigation[20].In an other study Van Goethen JW et al inferred that discitis is a serious complication of surgery, the diagnosis depending on the correlation of clinical ,laboratory and imaging findings. They also concluded that MRI appears to be more useful for exclusion rather conclusion of postop discitis[21].

In our study culture and sensitivity was done in two patients who underwent surgery .In one patient the etiological agent was staph. Aureus and in second patient the report was no growth. In a study conducted by Silber JS et al concluded that fortunately the incidence of discitis is low around 2%,the commonest etiological agent is staph aureus and the most sensitive test for diagnosis as well assessment of treatment is C-reactive protein. This has a good relation to the results of our study[22].

Regarding treatment all patients were advised complete bed rest, analgesics, oral, and i-v antibiotics .Ten patients improved within 2 weeks but treatment was continued for more than 6 weeks . In a study by Silber J Set al observed good long term outcome with antibiotics and spinal immobilization[21].Three patients did not respond to this treatment and were subjected to surgery(posterior interbody transpedicular fixation with curettage of disc and PIIF in two patients and anterior interbody fusion in one patient). Surgery is necessary in patients who do not respond to conservative treatment. Takahiro et al reported 5 cases of methicillin resistant staphylococcus aureus spondylodiscitis. They concluded that treatment for MRSA spondylodiscitis with posterior instrumentation provided patients with satisfactory final outcomes[23].These findings have good correlation to the results of our study.

In a study conducted by Gregory J, Przybylsky, Ashwini D and Sharan concluded that single stage debridement, arthodesis and internal fixation can be successfully used in the treatment of pyogenic discitis and vertebral osteomyelitis with out excessive surgery related complication[24].

CONCLUSIONS

The final conclusion is that post operative discitis is rare and serious complication of spine surgery for disc excision. Considering the septic and aseptic form of discitis every precaution should be taken to prevent it. Discitis should be suspected in any patient with exaggerated symptoms after surgery and should be properly investigated to confirm the diagnosis. Once the diagnosis is confirmed strict bed rest with early oral and parental antibiotics (cloxacillin, fucidin, ceftriaxone) should be administered. For prevention careful operative technique ,avoidance of curette use, perioperative antibiotics and proper sterilization is mandatory.

REFERENCES

1. Conaughty JM, Chen J, Martinez OV, et al. **Efficacy of linezolid verses vancomycin in the treatment of methicillin resistant staphylococcus aureus discitis: a controlled animal model.** Spine. Oct 15 2006; 31(22):E830-2.
2. Hooten WM, Mizerak A, Carns PE, Huntoon MA. **Discitis after lumber epidural corticosteroid injection: a case report and analysis of the case report literature.** Pain Med. Jan-Feb 2006;7(1):46-51.
3.
4. Walters R,Rahmat R Fraser R ,Moore R. **Preventing and treating discitis: cephazolin penetration in ovine lumber intervertebral disc.** Eur Spine J.Sep2006;15(9):1397-403.
5. Martinez Hernandez PL, Amer Lopez M, Zamora Vargas F, Garcia de pasoP, Navarro San Francisco C, Perez Fernandez E, et. **Spontaneous infectious spondylodiscitis in an internal medicine department :epidemiological and clinical study in 41 cases.** Rev Clin Esp .Jul-Aug 2008;208(7):347-52.
6. Cottle L,Riordan T. **Infectious spondylodiscitis.** J infect. Jun 2008;56(6):401-12.
7. Chung JT, KimTS, Lim YJ, Kim GK, Rhee BA, Leem W. **Clinical analysis and long term results of postoperative lumer discitis.** J Korean neurosurg Soc.1995Mar;24(3):239-245.
8. Carragee EJ: **Pyogenic vertebral osteomyelitis.** J Bone Joint Surg Am 1997,79(6):874-880.

9. Schinkel C, Gottwald M, Andress HJ: **Surgical treatment of spondylodiscitis.** Surg Ifect archmt) 2003,4(4):387-391.

10. Kapeller P, Fazeka F, Krametter D, Koch M, Roob G, Schmidt R, Offendbacher H. **Pyogenic infectious spondylitis: Clinical, laboratory and MRI features.** Eur Neurol 1997;38:94-8.

11. Zink PM, Frank AM, Trappe AE. **Prophylaxis of post operative lumber Spondylodiscitis.** neurosurg Rev.1989:297 303.

12. Perronne C,Saba J, Behloul Z ,Samon Ceron D, Leport C, Vilde JL, Kahn MF,. **Pyogenic and tuberculous spondylodisciyis(vertebral osteomyelitis) in 80 adult patients.** Clin Infect Dis 1994;19:746-50.

13. Fouquet B, Goupille P, Jattiot F, et al. **Discitis arter lumber surgery, Feature of….Spine** 1992;17:356-358.

14. Kapp JP, Syber WA. **Erythrocyte sedimentation rate after following uncomplicated lumber surgery** 1979;12:329-330..

15. Jonsson B, Soderholm R, Stromqvist B. **Erythrocyte sedimentation rate after lumber spinal surgery.** 1991;16:1049-1050.

16. Bircher MD, Tasker T, Crashaw C, Mulholland RC. **Discitis following lumber surgery.** Imae S ,Igarashi S ,Koyama T. Spondylodiscitis after operation for lumber disc herniation. No Ssinkei Geka.1996Feb;24(2);149-55.

17. Meyer B Schaller K, Rohde V, Hassler W. **The C-reactive protein for detection of early discitis after microdiscectomy.** Acta Neurochir (wein).1995;136:145-150.

18. Hadjipavlou AG. Mader JT, Necessary JT, Muffoletto AJ. **Hematogenou pyogenic spine……management.** Spine.2000;25:1668-1679.

19. Wirtz DC Genius I, Wildberger JE, Adam G, Zilkens KW, Niethard FU. **Diagnosis and therapeutic management of lumber and thoracic spondylodiscitis-an evaluation of 59 cases.** Arch Orthrop Trauma surg.2000;120(5-6):245-51.

20. Frank AM, Trappe AE. **The role of magnetic resonance imaging (MRI) in the diagnosis of sponylodiscitis.** Neursurg Rev.1990;13(4):179-83.

21. Van Goethem JW, Parizel PM, Van den Hauwe L Van de Kelft E, Verlooy J, De Schepper AM. Neuroradiology 2000 Aug .42(8):580-5.

22. Silber JS ,Anderson DG, Vaccaro AR, Anderson PA, Mc Cormick P, NASS. **Management of postprocedural discitis.** Spine J,2002 Jul-Aug 2(4):279-87.

23. Takahiro Masuda, Kei Miyamoto, Hideo Hosoe, Hirofumi Sakaeda, Mizuo Tanaka, Katsuji Shimizu. **Surgical treatment with spinal instrumentation for pyogenic spondylodiscitis due to methicillin resistant staphylococcus aureus: A report of five cases.** Arch Orthop Trauma Surg.(2006) 126:339 -45.

24. Gregory J, Przybylski, Ashwini D, Sharan. **Single stage autogenous bone grafting and internal fixation in the surgical management of pyogenic discitis vertebral osteomyelitis.** J Neurosurg(spine 1) 2001:94 :1-7.

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